PATENT
01424-P0037B GSW/TMO

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	Arthur Ernest Conrad, *et al.*
Application No. 09/903,976	Filing Date: July 12, 2001
Title of Application:	Web Attract Loop
Confirmation No. 94444	Art Unit: 3622
Examiner	Boveja, Namrata

Mail Stop Amendment
Commissioner for Patents
Post Office Box 1450
Alexandria, VA 22313-1450

Declaration of Inventors of Prior Invention Under 37 CFR §1.131

Joseph F. Culano declares as follows:

1. I am an inventor named in the above application.

2. I and my co-inventors conceived of and reduced to practice the Web Attract Loop to which the present application is directed, including the subject matter of all pending claims in the present application, at least as early as July 12, 2000, the filing date of U.S. Provisional Patent Application No. 60/217,800 (copy attached at A).

3. Attached at B is a true and accurate copy of a document entitled "EnContactoYA Project Requirements Document" evidencing that the Web Attract Loop to which the present application is directed was reduced to practice, and in fact in use, at least as early as August 29, 2000. (See, e.g., page 16, line 9; page 67, lines 1-3 and 12-16).

4. All statements in this Declaration made of my own knowledge are true and all statements made on information and beliefs are believed to be true.

5. I understand that willful false statements and the like are punishable by fine or imprisonment or both and may jeopardize the validity of the application or any patent issuing thereon.

I hereby declare, under penalty of perjury under the laws of the United States of America, that the foregoing statements are true and correct.

April 29, 2008

Joseph F. Culano

Exhibit A

Web Attract Loop

BACKGROUND OF THE INVENTION

Screen savers are now in widespread use to prevent the premature degradation of CRT or liquid crystal displays as can occur if the same image remains displayed for too long, as is well known in the art. Screen savers operate in a background mode monitoring the input to the system, and once a predetermined time has elapsed since the last input, switch to a foreground mode in which they continuously alter the screen display so that it "saves" the screen, and may additionally function to hide or obscure what the user has displayed on his or her computer. While the use of screen savers with computer displays appeals to many users because of the imagery they present to the user, screen savers have not heretofore been used as a means to convey information originating from a web server at the request of an idle web browser. Further, screen savers have previously been implemented as relatively simple, self-contained computer application programs that are not typically integrated with other application programs or other aspects of computer operation. In particular, screen saver programs have not been constructed to enable activation via a web browser left idle and to have the present content provider within said idle browser determine the content of the screen saver for the purpose of engaging or attracting the attention to casual observers or passer byes through the repetitive display of visually compelling web content.

SUMMARY OF THE INVENTION

The present invention introduces a novel concept for web-based content and the use of web-based content as a screen saver. A web attract loop according to the invention is the automatic display of compelling web content after detection of an idle period of predetermined duration (the "screen saver embodiment") for the purpose of engaging the attention of casual observers. When operation of the attract loop is terminated via computer user interaction, the user is returned to the state of the primary interaction that existed when operation of the attract loop began. The content of the attract loop may take any form possible within the context of computer based system including text, graphics, animations, sound, and multimedia.

CLAIMS

1. A method for providing for an attract loop, comprising the steps of:
   - ✓ storing at least one attract loop on a computer attached to a computer network;
   - ✓ determining if there is no activity at a device with an associated display, said device being attached to said computer network;
   - ✓ sending said attract loop to said device when it is determined that there is no activity at the device;
   - ✓ terminating said attract loop upon user interaction and returning said computer to the state of the primary interaction that existed when operation of the attract loop began.
2. The method according to claim 1, wherein said computer is a web server.
3. The method according to claim 1, wherein said device is a web browser.
4. The method according to claim 1, wherein said attract loop is displayed within the open browser window.
5. The method according to claim 1, wherein said attract loop is displayed in full screen browser mode either in the existing browser or in an additional window opened by the attract loop.
6. The method according to claim 1, wherein a different advertisement is sent to said device for display after a predetermined period of time.
7. The method according to claim 1, wherein said attract loop contains any or all of the following content, text, graphics, animations, sound, and multimedia.
8. The method according to claim 1, wherein said attract loop contains any other form or combination of visual, auditory and olfactory content.

Exhibit B

ENCONTACTOYA
PROJECT REQUIREMENTS DOCUMENT

PREPARED BY

32 Park Drive East
Branford, CT 06405
(203) 483 2888
info@netkey.com

CONFIDENTIAL

EXECUTIVE SUMMARY

EnContactoYA plans to become the virtual meeting place, the emotional link and the cultural bridge between the immigrant Mexican population in the U.S. and their families and friends in Mexico through services such as video messaging, money transfers, and a marketplace for products and services.

The purpose of this needs analysis is to allow Netkey to fully understand the scope of the project proposed by EnContactoYA.

The Three key priorities where identified through our contacts with EnContactoYA and research to date. The EnContactoYA application must be:

1. Simple and intuitive interface with fast/easy navigation;
2. Engaging (interactive, bright, uplifting, fun, etc.);
3. Convey EnContactoYA's compassion for, and commitment to, the Mexican Immigrant community with a special emphasis on the *Emotional Link* created.
4. Emphasis the human aspects

The Three key priorities that drive our recommendations for the EnContactoYA Application include:

1. quick and reliable access to the EnContactoYA application for all users;
2. data security;
3. intuitive interface and fast/easy navigation.

Base on these observations, Netkey designed an application to appeal to the target audiences. The kiosk will be easy to use, quick to navigate, engaging, and interactive. The kiosk will convey the compassion and commitment of EnContactoYA (both the company and the employees) to Mexican immigrants both in the US and at home. It will effectively integrate video messaging with electronic funds transfers to create an application that conveys comfort, security, loyalty, and trustworthiness. The kiosks will be designed to allow for expansion and growth, including an E-Commerce, third party participation, and future enhancements.

I. Needs Assessment

II. Project Requirements

III. The Netkey Vision

IV. The Netkey Approach

V. Conclusions and Next Steps

Appendix

References

Glossary

I. NEEDS ASSESSMENT

1.0 INTRODUCTION

The purpose of this needs analysis is to allow Netkey to fully understand the scope of the project proposed by EnContactoYA. Netkey will use this information to do intensive research on possible solutions, and provide to EnContactoYA the one solution that we feel will be most effective and appropriate.

The 3 key priorities that will drive our recommendation for the EnContactoYA kiosk Interface include:

1. Simple and intuitive interface with fast/easy navigation;
2. engaging (interactive, bright, uplifting, fun, high quality video, etc.);
3. convey EnContactoYA's compassion for, and commitment to, the Mexican Immigrant community with a special emphasis on the *Emotional Link* created.
4. The 'human touch' - must emphasis the human aspects

The 3 key priorities that will drive our recommendation for the EnContactoYA Application include:

1. quick and reliable access to the EnContactoYA application for all users;
2. data security;
3. intuitive interface and fast/easy navigation.

2.0 ENCONTACTOYA PROJECT DEFINITION

EnContactoYA plans to become the virtual meeting place, the emotional link and the cultural bridge between the immigrant Mexican population in the U.S. and their families and friends in Mexico through services such as video messaging, money transfers, and a marketplace for products and services.

2.1 The Business Domain

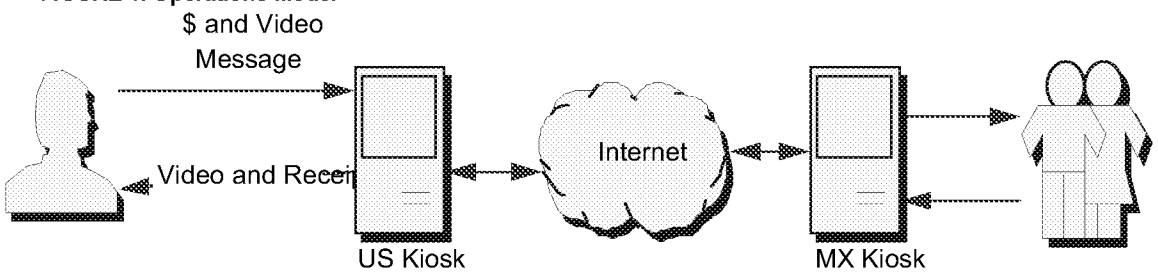
In Mexico, demand for the services provided by electronic funds transfer companies such as Western Union and Moneygram are high. However, the currency exchange rate used by money transfer services often exceeds 90 percent of the benchmark exchange rate set by the central bank. Indeed, a recent study by the United States Congress found that Western Union gave better exchange rates in countries where customers had a wider range of options indicating a low level of competition in the Mexican EFT market. While fees have fallen recently in response to litigation[1], sending $100 to Mexico can still cost about $25. Many believed these fees are unfair to Mexican immigrants in the United States who have limited financial resources.

1. A class-action lawsuit filed against Western Union and Moneygram in Federal District Court in Chicago accused the companies of failing to disclose exchange rates. When the lawsuit was settled in May, Western Union agreed to pay $2 million to Hispanic community organizations, and Moneygram agreed to pay $300,000. The companies also agreed to make $375 million in discount coupons available to anyone who had wired money to Mexico since 1987.

The resentment of established EFT companied amongst the Mexican American immigrants presents an opportunity for other organization to enter the market.

2.2 Operations

FIGURE 1. Operations Model



EnContactoYA operational diagram show the fundamental process supported by the application. Specifically, customer will be able to transfer cash and video messages from the US to Mexico. Mexico users will be able to receive cash and video, in addition to replying to the video sender via a video message. The US user in turn, receive the reply and prints a receipt.

3.0 CRITICAL SUCCESS FACTORS

There are a number of critical success factors (factors within our control) that, if not met, could seriously impact the effectiveness of the effort. Identifying these factors up front allows for their consideration throughout the process.The following list of Critical Success Factors were identified through our discussion with EnContactoYA and research to date:

- Personal user experience;
- Ease of use;
- Fast, efficient system response;
- Transaction Security;
- High Quality Video;
- Maximum of 24 hour turn around time on transfers;
- Successful tracking of Funds Transfers and Video Messages;
- Dial-in stand alone and/or client server application solution;
- Customer support (reliability, accuracy, and timeliness of support);
- Efficiency of process for EnContactoYA;
- Maintaining focus on emotional significance of EnContactoYA;
- Flexibility and adaptability of system.
- Availability of local content

4.0 ASSUMPTIONS

The recommendation presented to EnContactoYA is based on a series of Assumptions. Variation from this list may impact the effectiveness of the recommended solution. The assumptions include:

- Legal issues (are not the responsibility of Netkey).

- Data security is a top priority.
- Ease of use of the EnContactoYA application is essential.
- Cash management is out of scope (third party managed)
- Connectivity is available in all US locations.
- EnContactoYA responsible for adequate physical security of kiosks
- All interfaces will be in spanish language
- Currency exchange is out of scope (managed by exchange house in Mexico)

5.0 NEEDS ANALYSIS

The purpose of this needs analysis is to allow Netkey to fully understand the scope of the project proposed by EnContactoYA and the business context in which it will be developed.

5.1 Corporate Identity

Your corporate identity is often times the first and most lasting impression of your company. It is important that this identity be a symbol of what your company stands for. It is important for you to feel a great deal of ownership around the mark that will represent you visually. There are a few things that we would recommend.

- Have a designer look into a few different type treatments.
- Do a color study
- We recommend that the designer also survey and suggest a set of complementary colors that can be worked into a palette.
- If the designer is not Web savvy please let us know where we might be able to partner with them to make competent decision for colors that are Web safe.

5.1.1 Business Systems

Once the logo and identity have been established those concepts should be applied to the business system. Often times referred to as corporate collateral. These are the items like business cards, letterhead, envelopes, labels, data/spec sheets, instructions, and forms. Not all identity designers are competent business system designers. Make sure that you find a firm that is capable and willing to work on both systems. The development of paper forms is not critical to your process. However, if help is needed in this area we are more than happy to have our UI folks work with the designers.

5.1.2 Style Guide

This may or may not be a critical piece for your business. If you are the only people that are working with the identity, producing new collateral, and issuing press releases or other marketing materials, this is probably not a necessary expenditure. If at some point you expect people outside of the organization to develop collateral, like press releases or special offers that might have your identity on it, have the designer work out an identity manual. The purpose of the identity manual is to protect your brand. It allows people other than your marketing people to make informed design decisions. It will inform partners of placement, color, size, fonts, space, and usage for various situations. It will insure

that no matter how many people are working on your collateral that everything will remain tightly branded.

5.1.3 Branding

You have an enormous opportunity at this stage of your business. You are in a market space that is inundated with Goliath organizations that routinely abuse the personal feeling of their clientèle. In a space such as international funds transfers it is important for people to trust you. Our sense is that if you can earn trust and keep that trust you will be able to rapidly increase your market share. Your identity should convey trust, warmth, knowledge and care. The visuals that you set in front of people should emote them to trust you.

6.0 BUSINESS PLANNING AND MARKETING

There are a number of business planning and marketing issues that, if not met, could seriously impact the effectiveness of the effort. However, research to dates indicates EnContactoYA's high level of expertise and understanding with regards to the proposed project. Nonetheless, Netkey has identified several areas worthy of additional effort and/or consideration.

6.1 Strategic Advertising

As a testament to strategic advertising, an example can be made of MoneyGrams marketing approach. In the US, Western Union has approximately 95 percent unaided awareness among consumers of wire transfers. To compete with Western Union, MoneyGram conducted a market demographic study that identified urban areas with high concentrations of african americans and hispanics as their core customer base. So, they embarked on an advertising campaign targeted toward these two specific ethnic groups.Since then, unaided awareness among its target consumers has effectively doubled and transactions have increased, reversing a long slide.

6.2 Public Relations

PR is a very powerful tool that often times is overlooked. It is our suggestion that EnContactoYA work with a public relations firm for the launch of the application.

7.0 COMPETITION

EncontactoYa appears to have conducted a thorough competitive analysis study prior to engagement of Netkey. However, in the course of conducting research for the development of the PRA, several relevant articles where discovered.

MoneyGram. Implement a handful of benefits to increase their market traction--a free three-minute call to the receiver; a 10-word message with a transfer; and a 10 percent discount with the use of a MoneySaver Card. MoneyGram specifically targets people without tradition banking relationships

including expatriates sending money to families at home, or tourists without local banks and in need of quick cash.

Western Union. American Express Co. is teaming up with Western Union to allow consumers to pick up wired money at 6,000 Amex automated teller machines. The companies are aiming to provide the service by early 2001. In addition, Western Union has plans to enroll other ATM owners and operators. The proposed system would allow consumers to send funds from a Western Union agent to any participating ATM in the United States. No bank card would be necessary to collect the funds; recipients would simply type in an identification number and system-assigned confirmation code relayed to them by the sender.

8.0 ENCONTACTOYA APPLICATION

8.1 Target Audience

EnContactoYA plans to become the virtual meeting place, the emotional link and the cultural bridge between the immigrant Mexican population in the U.S. and their families and friends in Mexico. The target user community is comprised of a high percentage of non-bankable individuals that are not currently services by existing business establishments. The level of technical sophistication of these users is minimal. In addition, the level of distrust of banking institutions is believed to be substantial. One of the primary objectives will be to develop trust through a high rate of person-to-person contact via customer service phone centers and to provide a personal user experience to the extent possibel.

8.2 Interface Environments

The Application will include several interface environments, designed for users of various types and security levels.These interface environments may be considered to be modes of the central Application. The functions available in each environment (or mode) are defined by what the particular user (group) is allowed to do with the application, and what sort of data he is allowed to access.

The primary interface environments for the Pilot phase will be:

- US Kiosk Customer Interface (USCI)
- US kiosk Service Interface (USSI)
- Mexico Kiosk Customer Interface (MCI)
- Mexico Kiosk Service Interface (MSI)
- Mexico Exchange House Interface (MEI)
- Customer Service Interface (CSI)
- EnContactoYA Administrative Interface (EAI)

Within each of these environments, there may be multiple security levels dictating what data the user can access and update.

8.2.1 US Kiosk Customer Interface (USCI)

1. User authentication

2. Choose recipient
3. Record Video
4. Send Video w/o funds
5. Transfer Funds
6. Transfer Funds w/Video
7. View account information & transaction history

Security levels. This interface will provide access to only those functions permitted by EnContactoYA customers. Only one security profile necessary for this interface, (us-user).

8.2.2 US Kiosk Service Interface (USSI)

1. Authentication
2. Access to Customer Service web interface

Security levels. Customer service representative logging on to the EnContactoYA application from a US kiosk will be authenticated by the central server and if approved will be forward to the web based customer service interface. The kiosk may display an on screen keyboard if necessary.

8.2.3 Mexico Kiosk Customer Interface (MCI)

1. Authentication
2. View Video
3. Receive Funds
4. Record Video
5. Send Video

Security levels. This interface will provide access to only those functions permitted by EnContactoYA customers. Only one security profile Necessary for this interface, (mx-user).

8.2.4 Mexico Kiosk Service Interface (MSI)

1. Authentication
2. Access to Customer Service web interface

Security levels. Customer service representative logging on to the EnContactoYA application from a US kiosk will be authenticated by the central server and if approved will be forward to the web based customer service interface. The kiosk may display an on screen keyboard if necessary.

8.2.5 Exchange House Interface (MXI)

1. Authentication
2. Customer account access
3. Transaction processing (distribute funds and update account)

Security levels. Exchange house representative logging on to the EnContactoYA application in mexico will be authenticated by the central server/or the local kiosk application if connectivity is not available. They will log on from a specified location/system the interface will be available ONLY from this location. For security reasons, there will not be an alternative means of accessing the exchange house interface.

8.2.6 Customer Service Interface (CSI)

1. Authentication
2. User account access
3. User account modification/creation
4. Transaction maintenance

Security levels. The customer service interface will require several security profiles. The basic profile will permit customer service representatives to update/create customer account and provide account activity information. The second profile will permit transaction modifications such as refunds/cancellations etc.

8.2.7 EnContactoYA Administrative Interface

1. Authentication
2. Access to all other interfaces from a centralized location
3. Account management (user, customer service, administrative, etc.)
4. Network monitoring
5. Kiosk monitoring and administration
6. Content management

Security levels. The administrative interface will require several security profiles. each of the functions may require a dedicated individual with specific access to the one assigned function, such a content management.

8.3 Structure and Content

The interface for EnContactoYA kiosks will be intuitively structured allowing the user to navigate and find desired information quickly and effectively. Sections within the kiosk application will include:

- Create a new account
- user log-in
- record a video
- transfer funds
- access hometown news
- *Other not yet defined features

Content for the EnContactoYA kiosks, i.e. hometown news, will be written and provided by EnContactoYA, contracted copywriters, and third-party news sources.

8.4 Design

EnContactoYA application will be designed to appeal to the target audiences described above. The kiosk will be easy to use, quick to navigate, engaging, and interactive. The kiosk will convey the compassion and commitment of EnContactoYA (both the company and the employees) to Mexican immigrants both in the US and at home. It will effectively integrate video messaging with electronic funds transfers to create an application that conveys comfort, security, loyalty, and trustworthiness. The kiosks will be designed to allow for expansion and growth, including an E-Commerce, third party participation, and future enhancements.

8.5 Electronic Funds Transfers

The EnContactoYA application will serve a primary purpose of facilitating the electronic transfer of funds to Mexico destinations. Timely, accurate and secure transaction are of paramount importance. The essence of the EnContactoYA application is transaction processing. Therefore, the overall design will incorporate many of the common features and functions typical to transactional systems such as redundant data storage, data security, and tractability.

8.6 Video Messaging

The primary marketing component of the EnContactoYA application is based on the emotional link facilitated by an attached video message with each funds transfer. The security and tractability of the attached videos are of less importance than the transaction it self, non the less, all efforts should be made to insure timely and accurate video retrieval and display to provide a memorable experience to the user.

The key strategic concern for EnContactoYA reading the attached videos is the image quality. The higher the quality, the more memorable the experience. The key tactical concern is of video file size. Limitations on bandwidth and storage place constraints of the overall decision as to what format for compressing, size and quality.

8.7 E-commerce

EnContactoYA kiosks will be designed to expand with the growing needs and functionalists required by EnContactoYA, including e-commerce functionality for an on-line international purchases. Specifics with regards to budget and scheduling to develop this functionality would require more information with regard to scope, partnerships, needs, service levels, # of products, fulfillment methods, etc.

8.8 Maintenance

EnContactoYA will need to manage kiosk side content and monitoring from a central web server. All Usage and system Information from the kiosk will be sent back to the central server for reporting.

Needs:

- Transfer System Logs from the Kiosk back to a central reporting server.
- Monitor the Kiosk software for “Not Responding” status and will restart the application when required. *Not Finished
- Send kiosk heart beat information back to the central web-reporting server.
- Kiosk usage and trend reporting
- Ability to manage and monitor kiosks remotely from a web site.
- Notification by page and E-mail if a kiosk has problems or fails to check-in at its appointed time.
- Network Monitoring, which includes keeping track of line connectivity, router statuses, and most other hardware networking issues.

8.8.1 Kiosk hardware maintenance

EnContactoYA must establish their desired level of service for each kiosk location that address the following kiosk maintenance needs:

- Site Preparation
- Installation
- Remedial Repair
- Custodial services
- Parts management

9.0 CHALLENGES AND OBSTACLES

There are a number of challenges and obstacles (factors outside our control) that, if encountered, could have a significant impact on securing a feasible, effective, and appropriate solution. By identifying these challenges up front, they can be addressed before they cause problems.

The following list of Challenges and Obstacles were identified through our discussions with EnContactoYA and research to date:

- Legal Issues
- Last Mile connectivity for kiosks placed in Mexico
- Physical security of kiosks
- Techno phobia of customers.

II. PROJECT REQUIREMENTS

10.0 PURPOSE

The purpose of this document is to describe the EnContactoYA Application in terms of interface design and functionality requirements, based on target audience needs and the objectives of EnContactoYA.

While the information is generally intended to provide the development team with an understanding of the EnContactoYA Application, certain portions also intend to provide EnContactoYA (the client) with a basic overview of development methods and process.

11.0 APPLICATION OVERVIEW

EnContactoYA plans to become the virtual meeting place, the emotional link and the cultural bridge between the immigrant Mexican population in the U.S. and their families and friends in Mexico through services such as video messaging, money transfers, and a marketplace for products and services.

The EnContactoYA application will facilitate the transfer of funds and video messages between US and Mexico locations. A key component of the system will be self service kiosks strategically located throughout the US and Mexico markets. The kiosks will provide a simple and intuitive Interface, provide automated bill acceptors, record and display motion video, and distribute user specific comntent. The objective is to turn the kiosk into the focal point and community link for US mexican emigrants.

12.0 FUNCTIONAL REQUIREMENTS

The Application includes a complex set of functions available through different interface environments and for users of different security levels.

Note, the funtionalities listed under each section are not listed in sequential order of events. The timing characteristics of the functional requirements will be established in state transition diagrams produced during the detailed specifications phase of development.

12.1 Functions Ordered by User Group

*An asterisk next to an item indicates that functionality has not been clearly defined or may not be needed.

The Application will include several interface environments, designed for users of various types and security levels.These interface environments may be considered to be modes of the central Application. The functions available in each environment (or mode) are defined by what the particular user (group) is allowed to do with the application, and what sort of data he is allowed to access. The func-

tions of these various interfaces will be organized by the functional group that utilized the particular feature/function of interest.

Within each of these groups, there may be multiple security levels dictating what data the user can access and update.

12.1.1 US Kiosk Customer

1. User authentication
2. Choose recipient
3. Record Video
4. Capture Facial Image
5. Send Video w/o funds
6. Transfer Funds
7. Transfer Funds w/Video
8. View account information & transaction history
9. Customize Interface (news, background, etc.)
10. Personalization:
    - display specific background
    - show list of pending transactions
    - start playing video (should probably specify some time to wait before starting playing here…)
    - Show personal hometown news (at button touch)
    - Hometown news availability
    - By town, or
    - by kiosk general location if no specific local town news available
11. Print receipt

User registration and referrals can also happen at the US kiosks site either by the customer calling the help center, or with the help of the assistant on site. If through assistant, he/she will be able to access the admin system for user registration at the kiosk itself through a secret key combination. If through help desk people, customer provides info verbally over the phone. In either case, the admin system accessed (either by the help desk operators or the US kiosk assistants) is the exact same system.

Security levels. This interface will provide access to only those functions permitted by EnContactoYA customers. Only one security profile necessary for this interface, (us-user).

12.1.2 Mexico Kiosk Customer

1. Authentication
2. View Video
3. Receive Funds
4. Record Video
5. Send Video
6. Print Receipt

*The EnContactoYA store employee in the Mexican store kiosk locations will do user registration and referrals. This employee will access the same admin system that the help desk personnel have access to. They may access the admin interface either through a ECY computer or the kiosk itself.

Security levels. This interface will provide access to only those functions permitted by EnContactoYA customers. Only one security profile Necessary for this interface, (mx-user).

12.1.3 Exchange House Representative

1. Authentication
2. Customer account access
3. Transaction processing (distribute funds and update account)

Security levels. Exchange house representative logging on to the EnContactoYA application in mexico will be authenticated by the central server/or the local kiosk application if connectivity is not available. They will log on from a specified location/system the interface will be available ONLY from this location. For security reasons, there will not be an alternative means of accessing the exchange house interface.

12.1.4 EnContactoYA Customer Service

1. Authentication
2. User account access
3. User account modification/creation
4. Transaction maintenance

Security levels. The customer service interface will require several security profiles. The basic profile will permit customer service representatives to update/create customer account and provide account activity information. The second profile will permit transaction modifications such as refunds/cancellations etc.

12.1.5 EnContactoYA Administrative Interface

1. Authentication
2. Access to all other interfaces from a centralized location
3. Account management (user, customer service, administrative, etc.)
4. Network monitoring
5. Kiosk monitoring and administration
6. Content management (local news)

Security levels. The administrative interface will require several security profiles. each of the functions may require a dedicated individual with specific access to the one assigned function, such a content management.

12.2 Structure and Content

The interface for EnContactoYA kiosks will be intuitively structured allowing the user to navigate and find desired information quickly and effectively. to cater to users with low computer literacy skills, navigations paths should be restricted such that the user is led through each process in a 'wizard' like fashion. Sections within the kiosk application will include:

- Create a new account
- user log-in

- record a video
- transfer funds
- access hometown news
- *Other not yet defined features

Content for the EnContactoYA kiosks, i.e. hometown news, will be written and provided by EnContactoYA, contracted copywriters, and third-party news sources. Kiosk users will be allowed to choose the source of the news listed when logging in.

12.2.1 Other Non-User Specific Requirements

- All kiosks must have attract loops
- All kiosk must have audio instruction (spanish)
- All kiosk will have touch screens
- US kiosks will have automatic US currency bill acceptors (1s, 5s, 10s, 20s, 50s, 100s)
- All kiosk will have video/web cameras

12.3 Reporting

The EnContactoYA application must provide both strategic and tactical information via a robust reporting system. The following reports have been identified:

- Registration metrics
- User profiles
- Usage by location
- Relationship reports ($transferred to whom?)
- Call center stats
- Average time at kiosk
- suspicious or excessive transfers
- Sales reports
- Points or Loyalty program reports
- Error reports
- Reliability reports
- Complaints
- Reconciliation reports
  1.Exchange house vs. EnContactoYA
  2.Cash drop vs. transfers
- Location demand reports (future location demand)
- Exit point reports (abandoned shopping cart analogy)

12.4 Promotions

The EnContactoYA application must support common loyalty program features and functions such as:

- Holiday specials
- Special transfer rates
- Coupons?

- Other incentives?

12.4.1 Points

- Points accumulated can be used by all people in person's contact list
- Points will not be given out for referral, if person referred already exists in DB

12.5 Video

- Video plays on kiosks once person logged in only once - local video copy deleted once logged out, unless special promotions apply
- Video backup IS NOT kept on caching server - cache server is just a temporary staging server between US and Mexico kiosks
- Videos = 2 minutes maximum
- free with $transfer
- will cost $or points if person sends video only
- Video must always be downloaded locally to kiosk - never to be streamed from caching server even if super fast connection is available.

12.6 Language

All EnContactoYA application interfaces must be written in Spanish, including audio/video instructions. It cannot be assumed that user of any type have english language skills this includes all customer service and EnContactoYA administrative users.

Language specific portions of the application should be table driven such that the addition of new languages would simply entail translation of existing verbiage and enter into the appropriate tables.

13.0 HARDWARE REQUIREMENTS

·Kiosk handset:

- Need be able pick up handset and automatically dial call center, or
- Use as microphone in video recording
- System must be able indicate to call center person which specific kiosk call comes from and account logged on at time

Card Reader:

- Need be able to read simple magnetic card (if card swipe used), and
- Credit cards too (EnContactoYa indicated they might want to allow for credit card use in the future if there's a market for it)
- When person swipes card, # captured must be displayed on screen, and must supply input box for PIN

Printer:

- Kiosk must print receipt for every transaction

Keyboard:

- Physical keyboard required, (even with touch-screen keyboard availability) for any typing customers might have to do

14.0 NON-FUNCTIONAL REQUIREMENTS

The EnContactoYA application has functional and design constraints resulting from a variety of fundamental business decisions such as performance, reliability, and usability requirements.

14.1 Usability

EnContactoYA application will be designed to appeal to the target audiences described in section I paragraph 9.1. The kiosk will be easy to use, quick to navigate, engaging, and interactive. The kiosk will convey the compassion and commitment of EnContactoYA (both the company and the employees) to Mexican immigrants both in the US and at home. It will effectively integrate video messaging with electronic funds transfers to create an application that conveys comfort, security, loyalty, and trustworthiness. As with all kiosk applications, the user interface is of utmost importance. Thus, careful attention must be paid to system usability with particular attention paid to the level of technical and educational levels of the target audience.

- Must not lose any customers or transactions.
- Customer should never be sent away without being able to go through with transaction, except in case of lost PIN.

14.2 Scalability

The beta phase of the EnContactoYA application will consist of approximately four kiosks, two on each side of the boarder. In addition, the kiosk will not have a permanent Internet connection. A sneaker net will be used to transfer files from kiosk to server. However, the application used in the beta phase should be designed such that the migration to a multi tier, fully connected, systems environment should not require a significant rewrite.

In subsequent phases, maximum system usage, estimated in the four year plan, is expected to reach 4,000,000 transaction annual, distributed across 500 kiosk, 250 in each country. Each transaction will consist of the funds transfer and account information as well as a video file of undetermined size. The system design must account for this system scaling and provide for efficient video file transfer and storage as well as transaction data archiving and mining needs.

14.3 Security

Security is of paramount importance due to the nature of the business in which EnContactoYA is venturing. Financial transaction require the highest degree of security possible, thus, all efforts should be made to create an application that cannot be compromised either intentionally or accidentaly.

14.4 Cost

EnContactoYA has specified a maximum of $9000 each for US kiosks and $4000 each for Mexico kiosks. ECY is a sensitive to application development costs and desires the use of Mexico based developers to minimize overall expenditures.

15.0 OTHER REQUIREMENTS

15.1 Cash Management

EnContactoYA will utilize the services of a third party cash management organization.

15.1.1 Mexico Cash Management (Paid Out)

- not dispensed at kiosk, paid by store employee
- store employee must logon and update EnContactoYa system for each payout transaction
- ECY application will provide interface of monitoring transaction status (i.e. user notified, cash dispensed, etc.)

15.2 E-Commerce

- Ability to buy services from partners for cash
- specialized system not connected to other e-commerce sites
- offer special products at local Mexican stores
- USA person would pay for products from US kiosks

III. The Netkey Vision

16.0 OVERVIEW

Netkeys vision for the EnContactoYA application will be elaborated in three stages. The first section will discuss the computer-human interface. Section two will discuss software design. Section three will discuss the network infrastructure needed to support the Netkey design.

16.1 EnContactoYA Technological Needs Summary

- Strict security and access controls
- Storage of large amounts of data
- Multiple database user roles
- Dynamic generation and display of simple charts
- Input forms for dynamic display of data (search)
- Implementation of algorithms for processing data (Action Plan)
- Generation of E-mail, fax and postal communications (single and batch)
- Creation and customization of communications templates
- Mail-merge type functionality for communications templates
- Development and deployment of algorithms for generating communications
- Database triggers for initiating automatic functions
- User-editable parameters (every N days, after N weeks, etc.)
- Data Mining and reporting (third party tools)
- Activity logs and audit trails
- Backup and recovery method
- High quality video capabilities
- Remote system monitoring capabilities
- Content management capabilities

16.1.1 Access Points

The Netkey Systems Architecture and Network Infrastructure facilitate the following system access points:

- Kiosk access points
- Web Interfaces (customer support, administrative, etc.)
- Call Center

16.1.2 Software Design

The Netkey systems design defines the functional capabilities of the EnContactoYA application. The proposed design will address the following components:

- Account Management
- Communications
- Transaction Processing

- UI Structure and Content
- Application Security

16.1.3 Network Infrastructure

The Netkey Network Infrastructure provides the means to link all the pieces of the EnContactoYA business together. By a mix of Open Systems Interconnection (OSI) products and pragmatic proprietary products, (for example, SNA), a communications infrastructure will be deployed to connect users to systems, systems to other systems for information sharing, and systems to the network elements they are managing.

16.1.4 Integration and Evolution

A vision for systems evolution has been create to provide a clear picture of how these systems will look in the future. It is important, however, that a very pragmatic approach is taken to realizing this vision.

17.0 SOFTWARE DESIGN

17.1 Access Points

Even before a newborn infant's vision has completely cleared, it is already exploring its new world by reaching out and touching. The desire to touch is innate, primal.

Therefore, what could be more intuitive and natural than interactive computer applications that can be controlled by touch? A touchscreen's most obvious advantage is its directness: what you touch is what you get. This simplifies the whole computer/human interface, eliminates learning curves, and instantly transforms anyone who can touch into an expert user. (Can't type? No problem.) And touchscreens provide fast access. It takes time to reach for a mouse and maneuver it to where you need it on the screen. Because touch control is more direct, users can work faster.

A touchscreen interface greatly reduces a user's control options. While this may sound bad, it is actually a good thing, for several reasons. First, it increases system security. A hacker with an ordinary computer interface can do untold destruction, but take away the keyboard and give him only pre-determined menu choices, and he is rendered powerless. Reducing choices also increases user efficiency and accuracy. Menu choices guide users step-by-step through a process, thus virtually eliminating operator error.

Touchscreen systems are more reliable, durable, and secure that other interface devices. Keyboards and mice are easily stolen and very susceptible to wear and tear, vandalism, and environmental hazards.

For an exhaustive comparison of the various technologies, visit the Carroll Touch Web site (http:// www.carrolltouch.com/ CTgraph/techeval.htm).

17.1.1 Things to remember when developing for touch screens

Arguably the worst kiosks in existence are the ones that have been created by developers who have added a touchscreen interface as an afterthought. It is a huge mistake to assume that a touchscreen is a mere mouse substitute that can be grafted onto any old mouse-driven application. A good touchscreen-based kiosk application will have a look and feel unlike any other type of interactive application. And touchscreen development has its own unique hurdles and issues. for touchscreen application to be successful, it must be planned as a touchscreen application from the outset. With that warning in mind, here is a list of touchscreen application development tips:

Know your audience/user As with any software design, it is important to have a good profile of the end users of your application. You should know your target audience's culture and skill level.

Build touch systems with touch systems Be sure to supply your development team with touch-screen-based computers before design begins. Don't let them build the application with a mouse-controlled system and wait until it's done to test it on a touchscreen system. Test usability periodically as you go along.

Avoid complex GUI design Use a simple point-and-click interface. Remember, a touchscreen isn't a mouse, so don't try to incorporate dragging and dropping or pull-down menus. These things, along with double-clicks, scroll bars, and multiple windows, tend to confuse users and slow them down.

Run applications full-screen Remove title bars and menu bars so your application can take full advantage of the entire display area. And don't forget to turn the cursor off, so that your users aren't confused by the presence of a pointing mechanism they can't control.

Build for speed Users expect immediate feedback. They'll quickly walk away from a sluggish system. Therefore, you must keep their attention with a quick response to touches. Fast feedback will also help prevent the sort of user frustration that often results in vandalism. Don't use graphics modes that offer excessive colors or unnecessarily high resolution--they only slow down your system. If your application requires a delay-for printing or dialing for Internet access--provide some sort of graphical time indicator, such as an hourglass or thermometer, that reflects the time remaining in the execution of the software command. Similarly, orient the user to the time and depth of the process-such as, “Step 1 of 5 steps”--when your applications require several menus or screens.

Limit choices Don't offer untrained users more than four to six choices per screen. If you are designing a business application for trained users, however, you can use more choices--as long as the choices are organized thoughtfully. Provide a “home” button on virtually every screen so users don't get lost in nested menus.

Test usability Test your application on focus groups. If users pause in confusion, even for a moment, you've identified an area that needs improvement. Make sure the user groups reflect the diversity of your target audience.

Be careful with button design Bigger buttons are better. They have to be at least the size of an average human fingertip. For applications used by trained personnel, a.5-inch square (about the size of a fingertip) is the smallest feasible unit for finger touch. For public-access applications, this should be raised to 150 x 200 pixels--assuming the screen resolution is 640 x 480. Avoid placing

buttons too close to the edge of the screen where the monitor bezels can make buttons difficult to reach. A common button design trick is to make the actual touch-sensitive area a bit larger than the graphical button. That way if the user is a little awkward or fumble-fingered, a less-than-dead-on hit will still register. Make sure to leave enough space between buttons. Most people look for certain key buttons--such as Next Page or Exit--in the lower right hand corner, so save this area for your application's key control buttons.

Give careful thought to colors Use bright background colors (not black). Dark backgrounds accentuate on-screen fingerprints; using lighter backgrounds helps hide smudges and reduce glare. Dithering or other patterned or textured backgrounds also help combat screen glare. This is especially important if you know your application is going to be used in environments with high ambient lighting.

Give immediate touch-feedback Always give your users feedback as soon as they touch the screen. This is critical since the user gets no tactile feedback like the click of a key or a mouse. Many touchscreen designers add an audible click sound, which emulates the click of a key or mouse, and thus gives a familiar cue (at least to those users who are familiar with PCs) that a touch has been sensed. Visual feedback should also be given: reverse out the selected touch button, highlight it, or change the color when the user touches it.

17.2 Call Center

The call center will be dedicated telephone operators whose primary task will be to receive and record account information. operators will be provided with an administrative application interface, web based, to allow them to access and/or create customer accounts. The operators will access the EnContactoYA application via a web based interface connected to the central application server via an internet connection. Call center will also provide customer support services.

17.3 Web Interfaces

At this time, no Web interfaces have been defines. However, future plans may include Internet access to EnContactoYA applications for features such as Credit Card Transfers, or perhaps an E-Marketplace.

ECY may consider creating a web presence implemented ancillary to the primary ECY application. A demilitarized zone (DMZ) would have to be created to allow public access to ECY resources without compromising application security. The addition of a public web presence does not pose any significant problems nor does it adversely effect the overall design of the ECY application.

17.4 Video Messaging

To transmit uncompressed, broadcast quality video requires 160 Megabits per second (Mbps) of network bandwidth. Since most Internet users connect at speeds of only 28.8 Kilobits per second (Kbps), a connection 5,000 times slower than video, requires compressed content. Codecs (compressor/decompressors) are the software modules that perform this compression.

Windows Media Technologies codecs are highly optimized for both high quality compression and low data rates. In addition, the Microsoft Technologies video encoder are highly scriptable enabling easy and efficient application integration in comparison to rival CODECS. Perhaps the best way to see how Windows Media Technologies compares with RealSystem G2 is to put them head to head.

TABLE 1. Comparison Table

Video Codecs	**Microsoft Media 4.0**	**RealSystem G2**
Standards-compliant codec	Yes	No
Intel PIII optimized codec	Yes	No
Video de-blocking filter	Yes	Yes
Advanced motion detection algorithm	Yes	No
Players		
Playback file formats	ASF, RM/RA V4, WAV, AVI, MOV, MPEG, MIDI, IVF, AIF, VOD, AU, MP3, ID3	RM, WAV, AVI, VIVO, MP3
Shortcuts to favorite content	Yes	Yes
Video Window Size	Fully Variable	2 fixed sizes
Processor required to play back 300 Kbps at 30 fps	Pentium 133-MMX	Pentium II
Embeddable in IE and Netscape	Yes	Yes
Fully documented API set	Yes	No
Spectrum analyzer with graphic equalizer	Yes	Plus Player only
Video brightness and contrast controls	Yes	Plus Player only
Plug-in filter architecture for any new content type	Yes	Limited
Automatic codec updates	Yes	Yes
Seamless stream switching	Yes	No
30fps video down to 28.8 Kbps transmission	Yes	No
Closed caption/multi-language capabilities	Yes	No
Banner ad space in player	Yes	Yes
Display area for Clip Name, Author, Copyright	Yes	Yes
Content Creation		
Base encoder included with Product		
Encoder platform	Windows 95/98/NT	Windows 95/98/NT, SUN
Input format	AVI, WAV, MOV, MP3	AVI, WAV, MOV, MPEG

Maximum live encoding bit rate	>5Mbps	1Mbps
Multi-data-rate encoding	6 Bands	6 Bands (RealProducer Plus only)
Batch processing	Yes	RealProducer Plus only
Server communication protocol	TCP/HTTP	TCP
Server connections from encoder	5	1
Multi-threaded encoding	Yes	No
Automatic picture re-size on compression	Yes	No

17.4.1 Windows Media Technologies 7.0

Internet Computing chose Windows Media Technologies as the top streaming solution for intranets over a competitive offering from six companies, including RealNetworks, Vosaic, and Xing. In a series of competitive benchmark tests PC Magazine found that Windows Media Technologies offered superior video quality across the board compared with RealSystem G2: “In talking-head video comparisons, Windows Media played much more smoothly than [RealSystem] G2.” Along with superior audio and video quality, Windows Media Technologies have the most integration with the Microsoft Windows platform and deliver the leading streaming media solution.

TABLE 2. Netkey Performed Microsoft Media Encoder Tests

Profile	Video Size	Elapsed Time	Avg. fps	Expected fps	File Size
Video for Web Servers (28.8 Kbps)	160 x 120	2min00sec	9.8	15	307 KB
Video for Web Servers (56 Kbps)	176 x 144	2min00sec	9.8	15	448 KB
Video for single-channel ISDN (64 Kbps)	240 x 176	2min00sec	14.4	15	757 KB
Video for e-mail and dual channel ISDN (128 Kbps)	320 x 240	2min00sec	9.8		1.46 MB
Video for broadband NTSC (256 Kbps)	320 x 240	2min00sec	14.8		1.56 MB
Video for broadband NTSC (384 Kbps)	320 x 240	2min00sec	15		1.40 MB
Video for broadband NTSC (768 Kbps)	320 x 240	2min00sec	12.6		9.47 MB
Video for broadband NTSC (1500 Kbps total)	640 x 480	2min00sec	3.5		13.3 MB
Video for broadband NTSC (2 Mbps total)	640 x 480	2min00sec	3.4		14.0 MB
Video for broadband film content (768 Kbps)	640 x 480	2min00sec	4		7.79 MB
Video for broadband film content (1500 Kbps total)	640 x 480	2min00sec	3.5		13.8 MB
High motion video for broadband NTSC (1500 Kbps total)	320 x 240	2min00sec	11.9		18.9 MB

High motion video for broadband NTSC (384 Kbps)	240 x 176	2min00sec	18.2		5.09 MB
High motion video for broadband NTSC (768 Kbps)	320 x 240	2min00sec	13.3		9.30 MB
Video for broadband PAL (384 Kbps)	352 x 288	2min00sec	9	25	9.03 MB
Video for broadband PAL (768 Kbps)	352 x 288	2min00sec	9.6	25	9.37 MB

For examples of Microsoft Media Technologies go to the link below:

HTTP://ASIA.MICROSOFT.COM/WINDOWS/WINDOWSMEDIA/EN/COMPARE/TRYIT.ASP?LNK=1

The results found in our test indicate that a 640x480 video resolution would be suitable for ECY use. However, the processor performance of the system doing the mp3 compression has a dramatic effect on the quality of the video produced and the overall file size. Nonetheless, the http link above shows that it is possible to produce a two minute video in near DVD quality with a file size close to 10 meg providing sufficient processor power is available.

Netkey recommends the use of Microsoft Media Technologies 7.0 for the beta stage. If video quality produced in the real world tests prove to be insufficient hardware mp3 caparison boards may be utilized. However, the preferred solution is the use of software encoding, as it allows for simple application integration and eliminates hardware compatibility and upgrade issues.

17.4.2 Call Center Messaging

Netkey Recommends the use of a VOIP solution to minimize long distance communications charges incurred on call center calls placed from US kiosks. VOIP will also help better utilize the high speed data connection already required by the US kiosks.

It appears to be infeasible to use VOIP in the Mexico location due to limited data connectivity and sporadic connection time. In these instances, traditional telephone communication must suffice.

VOIP is feasible at 56kbps, however it is not of good quality. A minimum of 128kbps is suggested, although the higher the bandwidth the better the quality of VOIP. At 128kbps the quality is comparable to regular phone lines quality.

17.5 Database Administration

Only a privileged security administrator or the DBA should be allowed to create, alter, or drop users or alter Database user privileges.

Basic categories of database-management responsibilities for which different roles should be assigned:

- Creating and maintaining objects
- Tuning and database performance

- Creating new users and roles and assigning privileges
- Performing routine database operations such as backups and shutdowns
- Recovering the database in emergency situations
- Learning and experimenting with database capabilities, for inexperienced DBAs

The development team will work with EnContactoYA to answer the following questions, regarding database-user accounts:

- Who has the authority to approve accounts?
- What accounts require approval?
- How will accounts be approved? (hardcopy, E-mail, etc.)
- Who will create/delete/manage accounts? (DBA?)
- What constitutes a security breach?
- What are the appropriate penalties for each breach?
- What monitoring systems will be used?
- What customized audit reports should be run?
- How will developer environments be secured?

The development team will also help to determine what forms of backup and recovery will be used, and how user names and passwords should be structured.

17.5.1 Database Security

It is recommended that security policies be associated with tables and views, in order that access conditions (a predicate) are appended to SQL queries which display and update data records. Known as Virtual Private Database, this method enforces strong access controls, no matter how a user gets to the data.

- Secure Application Roles
- Customized audit reports

No specific software is required for database security. Obviously, application security, i.e. different levels of authentication based on login, will be managed by the application in conjunction with the database and its data. However, the database software and server do not require a specific software installation to achieve security. The database server(s) themselves will be behind a firewall and within a VPN. This is considered to be secure enough. Other security to keep in mind with the database and all other servers, is the physical security of the hosting center itself.

17.6 Transaction Processing

Netkey recommends the use of Microsoft Transaction Server as a platform for the transaction portion of the EnContactoYA application. This Microsoft application provides the robustness and security required by financial transaction processing systems.

17.7 Electronic Funds Transfer

ECY will conduct the currency exchange via an accounting application run parallel to the kiosk system. Sufficient reporting and synchronization capabilities will be implemented such that the not yet specified accounting package will accurately reflect ECY kiosk transactions.

Netkey recommends that ECY investigate the implications of Western Union acquisition of the exclusive license rights to the technology covering cardless ATM transactions from Electronic Data Systems Corp. of Plano, Tex. as this may pose a barrier to entry.

17.8 UI Structure and Content Organization

During the initial phase of the project, detailed screen lists and navigation flow maps will be drawn up for each interface environment. These flow maps will show how the pages relate to one another from a navigational standpoint (what links reside where, how the user can move from one function (page) to another, etc.). The flow diagrams supplied by ECY personnel will serve a a starting point for developing these screen flow diagrams.

17.8.1 Audio Instructions

All features and functions of the EnContactoYA application must be augmented with audio instructions narrated in Spanish. The instruction should be clear and concise. Netkey recommends the use of Windows media player file format for audio compression similar to recommendation made for video compression. (mp3). The instruction should be recorded in a professional studio to insure a high quality recording and appropriate message. If needed, Netkey can assist in the development of the audio and/or video instructions.

17.8.2 User Security Profiles

This is a preliminary list of Application users requiring access roles. Note that the sets of functions (and data) accessible by these users are not mutually exclusive.

- Us Kiosk user
- Mexico kiosk user
- Customer service call center
- EnContactoYA administrative users
- Content management users
- Exchange house user
- Exchange house admin
- Mexico assistant (ECY)

17.8.3 Biometric Authentication

Netkey has investigated various alternative means of authenticating kiosk user with the intent of finding the simplest solution requiring the least number of supporting business processes. Biometric facial recognition has been identified as a possible authentication solution for EnContactoYA.

The Netkey team, working in conjunction with Visionics, Inc. and Symbol Technologies, Inc. has developed a novel method of providing user authentication in a manner that provides a security level consistent with access card/PIN number methods.

The technique use a kiosk generated non-magnetic access card encoded with the biometrics of the users face, captured at the time of user registration in addition to an account number. When the user attempts to login to the EnContactoYA application by swiping their access card, the kiosk video camera will validate the biometric image on the card with the actual face of the user swiping the card. In effect, their face become the PIN number. (No more lost PINs!). If the user loses their card, they can simply pick up the kiosk hand set and speak with a customer service representative. Customer service can capture a facial image at this time and compare it to the one on file and if required, request other supporting information to verify the users identity. Upon successful authentication, customer service can instruct the kiosk to print a new access card, with the same account number and biometric image as before.

The proposed system would use the following sequence of events.

New User registration:

1. User selects register for new account
2. user provides account information (to customer service, on screen, other)
3. Video camera captures picture of user
4. biometric image recorded to central DB server
5. biometric image printed to ID card
6. ID card dispensed user

Returning User with Card:

1. user swipes card on kiosk card reader
2. kiosk compares biometric on card to user swiping the card
3. authenticated, kiosk retrieves account info (account number also on card)

Returning User without Card

1. User contacts customer service via kiosk handset
2. customer service captures biometric of user and identifies user via centralized DB of all user biometrics. This is done automatically via the centralized DB containing biometrics of all known ECY users.
3. customer service queries user for additional identification information based on account identified by biometric recognition.
4. If user is validated, kiosk is instructed to print new ID card

Returning user with card that does not pass authentication:

1. User swipes card
2. kiosk compares biometric on card to user
3. authentication fails
4. user asked to contact customer service via kiosk handset
5. customer service conducts one-to-many biometric search of DB. This is done programmatically by the biometrics software. The Vionics system we tested is capable of scanning 16,000,000

facial images a minute running on a dual processor windows NT server. The one-to-many search will be conducted against the DB anytime a users image cannot be validated against an image on an ID card.
6. customer service queries user for name account info and compares to identified accounts
7. customer service identifies user via personal information matching in combination with biometric and person recognition based on direct video link and stored image.
8. kiosk is instructed to print new ID card

The use of Biometric user authentication will require the following hardware systems to support the process:

- Symbol Technologies SE 2000 PDF Card Reader engine (integrated into kiosk)
- Visionics one-to-one authentication engine installed on each kiosk
- Visionics one-to-many identification engine and db installed on central server
- Any LOW COST NON MAGNETIC ID card printer (paper, plastic laminate, PVC, etc.)
- Video Camera (same camera used for video messaging)

> Note, this solution MAY require the use of two printers. One for ID cards, and the other for receipts. We're currently investigating single printer options.

A little about Biometrics Reliably matching a face print is unaffected by such variables as race, lighting, facial hair, expression, changing hairlines and even common types of plastic surgery. In fact, Visionics, Inc. claims that their FaceIt software can identify every face in a crowd, so long as each face is 20 x 20 pixels or greater. For security applications, it can also learn to discern a real face from a photograph being moved in front of it or even a recorded video image of a person.

Using biometric devices, it appears, can help companies save time and money. For instance, Phyllis Byrne, vice president of IBM's Distributed Systems Services division in Austin, says about 70 percent of the calls to corporate help desks concern problems with passwords or log-ons. IBM is expected to reduce those calls by 50 percent.

InnoVentry of San Francisco uses Biometrics for verification in its new kiosk-style check-cashing machine, which is already deployed in several cities in the South. By registering in advance, people who don't have bank accounts can cash their checks at the machines without the need for human intervention.

Biometric software can be purchased for approximately $500 per kiosk in addition to a one time licensing fee for the Database server which typical costs around $15,000. Alternative, many vendors operate on transaction fee based pricing models ranging from $.02 to $.10 per transaction.

18.0 ADMINISTRATION

18.1 Kiosk Configuration and Monitoring

AKM (Active Kiosk Monitoring) is a tool that will allow NetKey and their customers to manage kiosk side content and monitoring from a central web server based at NetKey. All Usage and system Infor-

mation from the kiosk will be sent back to the central server for reporting. The AKM tool is two applications; a server based application and a kiosk client. Currently both applications have been developed for NT platforms.

18.1.1 AKM Features

- AKM will transfer NetKey and System Logs from the Kiosk back to a central reporting server.
- AKM will monitor the NetKey Kiosk software for "Not Responding" status and will restart the application when required.
- AKM will send kiosk heart beat information back to the central web-reporting server.
- Kiosks running AKM client software can still be monitored behind firewalls and even proxy servers.
- New NetKey configuration and monitoring files can be sent to Kiosk this will allow the changing of attract loops or entire kiosk configurations.
- New monitoring features can be added to kiosk at anytime.
- If a Kiosk receives a monitoring profile that tells it to run a monitoring object it does not have or has the wrong version it has the intelligence to go get the new object.
- Kiosk usage and trend reporting can be done on our central web server with NetKey custom reporting tools and in the future crystal reports maybe integrated.
- All Information about the kiosk is stored in an SQL database.
- Customers will be able to manage and monitor their kiosk remotely from our site.
- Customers can be notified by page and E-mail if a kiosk has problems or fails to check-in at its appointed time.
- New versions of NetKey can be installed remotely - Possible Bandwidth problems.
- Network Monitoring, which includes keeping track of line connectivity, router statuses, and most other hardware networking issues.

18.1.2 Monitoring of Peripherals

The AKM tool describe above, in conjunction with custom written device drivers that interface with peripheral devices will enable complete auditing, monitoring and logging of all system events. Specific monitoring requirements have not been discussed thus far, however, the following issues have been identified through discussions with ECY personnel and research to date:

- Bill Acceptor monitoring (cash drop, errors, etc.)
- printer monitoring
- kiosk enclosure monitoring
- card reader monitoring
- usage monitoring (click stream analysis)

18.2 Account Administration

Account administration features will be developed as web based interfaces that allow administrative personnel to work from anywhere that has access to the EnContactoYA network.

18.3 Content Management

18.3.1 Kiosk Content

Kiosk specific content, such as local audio instructions, or kiosk specific information can be maintain via the Netkey AKM management tool. AKM can remotely manage kiosk networks from any Internet connected location.

18.3.2 Web Content

Web content can be remotely managed and supported by numerous content management applications. However, Netkey has found that when deploying a predominately Microsoft system that is wise to maintain software vendor consistency. Thus, Netkey recommends the use of Microsoft Site Server for content management features automating the loading of location specific content.

Microsoft Site Server is an addition Back Office component that contains content management feature, (among others).

Targeted content delivery, i.e. the GUI backdrop and the local news feature, should be differentiated from content loading, is an application specific feature and it is suggested that it is implemented as such. We are aware the Microsoft Site Server provides for some targeted content delivery and other features geared towards specific URL's or web sites, but it is our opinion that the ECY content targeting needs will be better served by implementing them as part of the web application itself. In addition, this will eliminate from having to introduce Site Server and its maintenance and management as part of the overall solution implementation.

19.0 KIOSK HARDWARE

Netkey suggest the following hardware based on the requirements of the EncontactoYa system. All components should be rugged and durable, and designed for indoor use only. KIS manufactures an off-the-shelf system that meets most of ECY requirements. In addition, the KIS enclosure meets all non functional considerations such as UL listing. However, the unit is not ADA certified, although, the nature of the enclosure, small, would permit the placement of the unit in a manner consistent with ada regulations.

Mars Bill Acceptor Series LE3900, with lockable, removable cassette.The LE3900 was chosen because of it's industry acceptance, flexibility, wide range of bills, and electronic update functionality. Other bill accepters that were considered included the BNA51/54 & BNA52/54 with escrow capabilities. However, EncontactoYa does not feel that this functionality is necessary at this time. The LE3900 is standard equipment in the off the shelf KIS kiosk enclosure recommended for the pilot phase. If pilot phase results indicate the need for a more robust bill acceptor capable of bill escrow the BNA units can be substituted for the LE as they are software interface compatible with the BNA units.

Kiosk Enclosure. Kiosk Information Systems (KIS) is about to introduce a new model (The Data Point) that will contain all of the features required by EncontactoYa, Pilot program. This model incor-

porates a handset, video camera, keyboard, mouse, touch-screen, bill acceptor, card reader and printer. The model will most likely sell for roughly nine thousand dollars with all the features required by EncontactoYa

FIGURE 2. KIS Kiosk

Panasonic ZU M1242L4DK 06A or similar style magnetic card reader. A rigid, vertically mounted magnetic card reader such as the Panasonic ZU m1232l4DK 06A can read any ISO standard magnetic card stripe. Netkey prefers the Panasonic card reader because of it's small size, proven results in the field and ease of configuration. Note, this card reader is standard equipment on the recommended KIS kiosk. However, if the use of Biometric authentication is used, a Symbol Technologies 2D bar code scanner will be required in addition to the magnetic card reader. (the Magnetic card reader will still be required for credit card scanning - future enhancements).

Integrated Headset with voice microphone (Microphone/Headset Jack). The integrated headset will allow EncontactoYa users to communicate with the customer service department. For pilot this may be an auto-dialer, but will eventually be voice over IP. Therefore, this device must be able to integrate for both of these purposes. Since the handset will be in a public place, it should be able to withstand a reasonable amount of distress.

A PC Based computer running Netkey. The EncontactoYa PC requirements are based on an estimate of the type of power required to run video applications. While the EncontactoYa application will not be primarily video, this capability will exercise the high end of the system capabilities. Such a system would include:

TABLE 3. (4) OEM 810E Computer System - ATX Micro, PIII 750, 128 MB RAM $4889.00

P/N	Description
CCA-2200SFBLANK	ATX Micro mid tower case. Includes indicators for power & HDD, and 150 W power supply. Recommended w/ 810E.
CDD-CD948E	AOpen 48X IDE CD ROM Drive

CPU-PIII677/133TF	Intel PIII, 750 MHz PGA processor w/ 256K on-die cache, 133MHZ front side bus.
FDD-MPF920	Sony 1.44MB 3.5" floppy drive
HDD-QMP10200LMA	Quantum 10.2GB, ATA66, EIDE, 7200 rpm
IOA-MSPS2	Microsoft PS/2 mouse V2.1A
IOA-S2DB9PCI	Siig Dual DB9 16650 serial port PCI Card
KBZ-E6101	Keytronic 104 key Win95, PS2 keyboard. Large enter key.
MBA-CA810E	Motherboard, Intel 810E. 4 PCI slots, 2 serial ports, 1 parallel port. Integrated sound, 4MB AGP video and 10/100 Ethernet. Operates on 66/100/133 FSB.
MEM-M16X64SDRAM133	128MB SDRAM DIMM 133MHz Unbuffered.
MSP-SP09M/X	Second Serial Port Module for safety mat
NIC-3C905CTXM	3Com Etherlink 10/100, PCI, WOL.
SWP-WINNT40	Microsoft Windows NT V4.0

Telpar Thermal Printer. A thermal based receipt printer will be necessary to print receipt information for EncontactoYa. Netkey suggests a Telpar unit because of our tremendous success with them in the field. The Telpar unit would support graphics, and can print in formats from 2 to 8 inches across. For the EncontactoYa application we would suggest a 2.5 inch paper width at a cost of around five hundred dollars per printer.

TABLE 4. Peripherals

HPP-MTP620PTelpar Kiosk style Thermal Printer, 2.25“(qty 4)$1932.00
HPP-TPS170A53Power supply for Telpar thermal printer, 120 VAC (qty 4)$188.00
IOA-READERNeuron Credit card reader (qty 4)$408.00
PSZ-OFFICE500TrippLite 500 VA Universal Power Supply (qty 4)$552.00
WAR-NBD3YRNATNext Business Day Nationwide On-site Service (qty 4)$380.00
OTZ-CDMANUALHardware manual on CD (qty 4)$12.00
OTZ-DISKIMAGEDisaster recovery CD, Original customer image. (qty 1)$15.00
NEC15TNEC 15T LCD Monitor (qty 4)$9188.00
PCS32003 yr. Onsite parts and labor 24X7 ext warranty (qty 4)$888.00
PLATEVESA 75 adapter plate (qty 4)$52.00
ARMArm w/set screw pivotal points (qty 4)$533.00
CABLEEXTCable extension kit (qty 4)
Symbol 2D scanner (qty 4)
Unidentified ID card printer (4) Cost and or ID card durability requirements unknown.
Proximity security mats will not be required for pilot phase. (ECY personnel on site)

19.1 Technical Components

The kiosk features of the EnContactoYA system can be further broken down into the following technical components:

User Interface The User Interface is a graphical presentation layer that sits on top of the EnContactoYA Internet based application.

Internet Connection Transactions processed through the US kiosks will be handled by the EnContactoYA central application server. As such, a persisting and reliable connection to the Internet will be required. It is anticipated that this will be a high speed connection of at least 56k.

Kiosk PeripheralsA number of devices will be attached to the kiosk to enhance and assist the user. The peripheral devices will include at a minimum a touchscreen, thermal printer, and a card reader. Additional peripherals may include a security mat or other security devices.

20.0 NETWORK INFRASTRUCTURE

The network infrastructure is made up of a number of factors including physical hardware (servers), hosting/locating of the servers and security for the servers (and data contained on them).

Our research involved first identifying and documenting the various physical hardware configurations and internet connections that would be required to support the EnContactoYA Kiosk network, the custom-built application, and the database of customer information and transaction.

20.1 Platform Selection

The platform proposed in implementing the EnContactoYa solution in general is the Windows platform, specifically Windows 2000. The main software technologies recommended as part of this platform consist of:

- IIS 5.0 --Internet Information Services-- for the web server,
- COM+ Services for the transactional tier (similar to MTS --Microsoft Transaction Server-- in a Windows NT environment),
- SQL Server 7.0 for the back end database.

As a rule of thumb, certain technologies work best together and it is suggested that competing technologies DO NOT get implemented as part of a mixed solution. For example, in a windows solution using IIS and MTS, it would not be recommended that the back end database is Oracle, rather that SQL Server is implemented instead. Although Oracle is a great database and there are arguments that it can handle considerably more volume than SQL Server, it does not however work very well within a Windows solution. Of course, we should also point out here that there are counter arguments on behalf of SQL Server, saying that it too can handle high volume and huge amounts of data. Whatever the case may be, the point here is that some technologies work best together within certain platforms, and should not be implemented cross-platform.

The main criteria for selecting the Windows platform for the EnContactoYa solution are as follows:

- It is the most cost efficient platform, while at the same time does not degrade system performance (see supporting info on system performance preservation in points below...) A solution implemented on Unix using for example Oracle as the back end database, BEA Tuxedo for the middle tier transactional processing and Apache for the web server is expected to have cost hundreds of thousands of dollars more.
- SQL Server is expected to efficiently and effectively handle the anticipated traffic and data volume of the ECY solution. As such no system degradation or performance suffering is expected. This in respect to some of the arguments made against SQL Server not being able to handle massive amounts of data…
- The overall windows platform architecture as recommended is a three-tier architecture that provides for a reliable, stable, highly available and scalable system.

Windows 2000 is specifically recommended, as opposed to Windows NT, so that specific features are taken advantage of. For the EnContactoYa solution to succeed it is not enough that it represents a great business model. It must also be a sound technical solution that will provide for all current system requirements as well as be scalable, while at the same time catering to the overall ROI of this effort. The transactional mechanism necessary in implementing this solution correctly, as well as other features that allow for a reliable and scalable system, have all been integrated as part of the operating system in Windows 2000. As such, no extra cost needs be accounted for, other than the correct version of the Windows 2000 OS, and of course costs to be allocated for the necessary hardware, software development and network infrastructure components.

Windows 2000 comes in several flavors itself. Of these, the suggested version is Windows 2000 Advanced Server, which would be comparable to Windows NT Server of the previous OS version. Windows 2000 Advanced Server is meant to be used for implementing full scale, e-commerce or comparable web solutions.

As mentioned earlier, in the Windows 2000 platform the transactional mechanism necessary in implementing the EnContactoYa vision as a system, is provided by what is now called COM+ Services, which used to be MTS or Microsoft Transaction Server in the Windows NT world. COM+ services is an extension of MTS, and it provides everything MTS was providing for (i.e. transaction management, connection pooling, etc.) plus more.

Windows 2000 also makes it much easier to implement Network Load Balancing. As it can be seen on the diagrams provided in this document, at least two servers are necessary for the initial implementation of the ECY system in order to correctly implement a solution that can later scale to support increased traffic. These would be the web servers set up in a cluster, so that Load Balancing can be implemented. Although two is the minimum required number of servers to setup Load balancing, a cluster in the Windows 2000 platform can support up to 32 nodes (servers) if necessary. All nodes in the cluster work together and are perceived as one server, so they provide for transparent service to incoming IP calls. The load of the incoming traffic can be distributed either as a percentage or equally amongst all hosts (nodes). However, all hosts in a cluster are usually set to run at less that 100% CPU capacity, so they may handle potential host outages without difficulty.

Load balancing also means higher system availability which is enhanced because the cluster automatically detects a node failure - if one were to occur - and it redirects and repartitions network traf-

fic within 10 seconds to the rest of the nodes. All the while, all nodes in good standing keep servicing their existing clients.

On the back end, the recommended database within the Windows platform, as pointed out earlier, is SQL Server 7.0. The database tier itself is also shown in a cluster implementation in the provided diagrams. Again, the main reasons for this is high system availability through fail over support. Having the database setup in a cluster assures that if something goes wrong with the one server --either planned for administrative purposes or unplanned due to hardware or software reasons--, the other server will pick up the load. As such, the end-user will see no performance degradation and the whole system will continue functioning as if nothing wrong happened.

There are two ways to setup the cluster service on the Microsoft platform: Active/Active and Active/Passive setup.

The Active/Passive setup involves two server nodes of which only one is active at all times. This is referred to as the primary node. The second server is idle and treated as a "hot spare". This means that it is ready to use in case of a fail over. In fact, if the primary node fails, the backup server picks up all operations immediately, and it continues to service clients at the same rate that the primary node did, as long as it has the same capacity.

This setup provides for maximum availability and performance, but it is obvious that it requires an investment in hardware that is not used, but serves as insurance in case it is ever needed. This cluster model requires two SQL Server licenses.

The Active/Active setup involves two servers of which both are active at all times. In this setup, each node makes its own set of resources available to the network in the form of virtual servers. In case of a fail over, the surviving node picks up the burden of running the resources of the failed node in addition to its own. It takes ownership of the shared SCSI disks and restarts the implementation of SQL Server that has failed over.

This setup provides for high availability and high performance, and it makes optimum use of the hardware investment. However, the capacity of each of the nodes must be configured so that each node runs their resource at optimum performance at all times. Depending on the resource and server capacity specifications, all client services can remain available during fail over, but performance can possibly suffer. For example, it is not advisable that both nodes run at 100% capacity all the time, because the surviving node will not be able to sustain the 200% load in case of a fail over. This cluster model requires four SQL Server licenses.

TABLE 5. Architectural Components

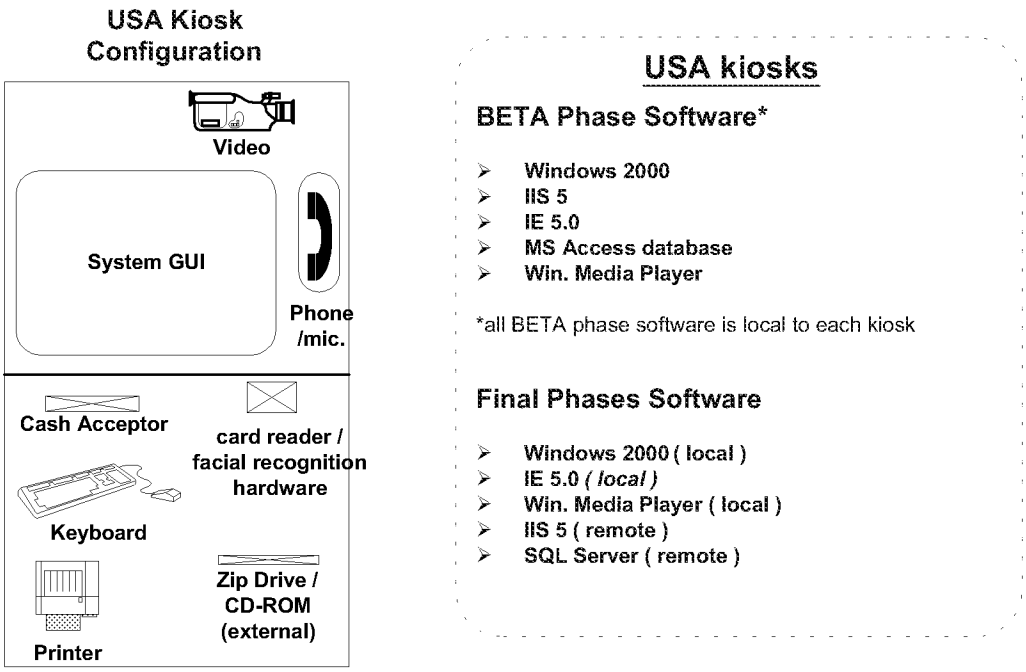
System Areas / Elements	Element Components / examples	Software Implementation
ECY application: Presentation (GUI) tier	Kiosk web pages (with targeted background, local news, customer pending transactions displayed, video play, etc.). The GUI of the administrative sub-system is part of this tier as well. This would be a web-based interface that the help desk and store employee people would be accessing.	ASP pages running in IIS 5.0, displayed in IE browser.ASP pages would be written in HTML, VBScript and JavaScript.

ECY application: Business (Middle) tier	This tier contains any middle tier objects which would implement the ECY business rules, communicate with the database to allow access to and from the data, allow access to monitoring processes on the kiosk, allow access to peripherals by communicating with the peripheral drivers, etc.	COM+ objects (written in VB or C++) implemented within Windows 2000 COM+ services (previously MTS in the Windows NT platform
ECY Application: Back-End (Data) Tier	The database – SQL Server – is part of this tier. All transactional and non-transactional data is stored in this tier and it is only the middle tier components that communicate with this layer.	SQL Server database (this contains the tables that would store all data and any stored procedures, views, or other database components that might be necessary)
Netkey software	Required for ECY application to run on a kiosk.	Netkey Pro 4.0
OS / Platform	Windows 2000 operating system and the rest of the platform components as described in the document	Windows 2000 Advanced Server, COM+ Services, Network Load Balancing, database Cluster service
Hardware components	This pertains to the several hardware components required for the overall implementation of the ECY solution. More can be seen on the network diagram, and more extensive explanations are included in the document. Examples: Firewall hardware, routers, switches, web servers, database servers, kiosks with all their hardware components such as microphones, speakers, video cameras, cash acceptors, etc.…	Drivers that might be specific to each of the hardware components

20.2 US Kiosk Configuration

Windows NT server 2000 will be required for each kiosk as local ASP pages must be processed. During the pilot phase, it may be possible to use NT 2000 in conjunction with MS Personal Web server. However, Netkey does not recommend the use of personal web server in a production environment.

FIGURE 3. US Kiosk Configuration



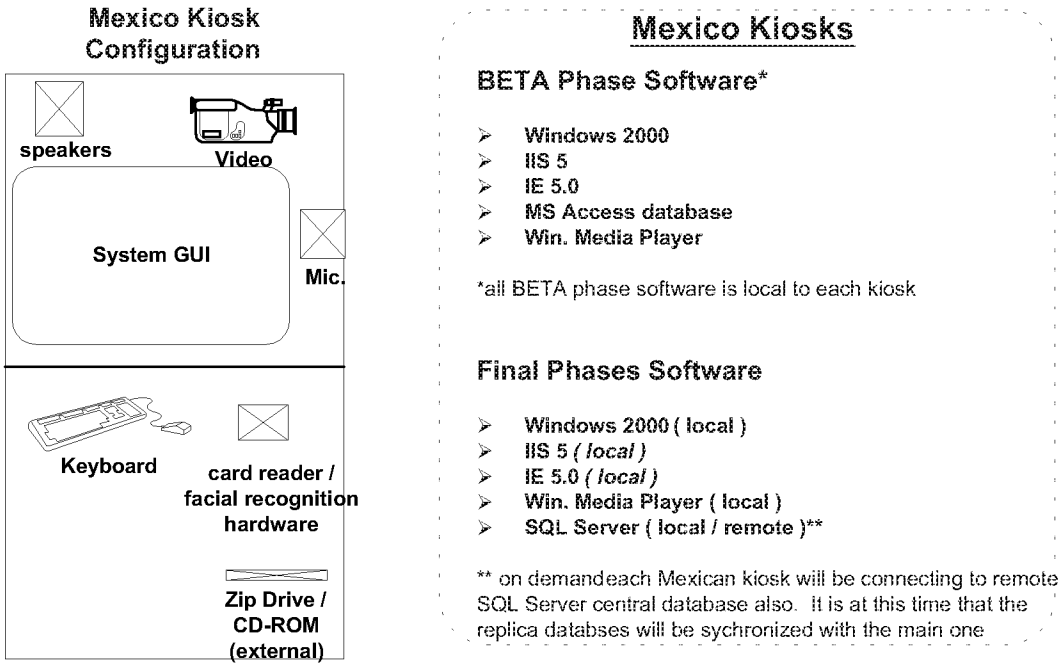
A web server is necessary in order to implement a simple or kiosk enabled web site. Due to the lack of network connectivity during the Beta phase, IIS is necessary for each kiosk during this phase. This necessity goes away while in the final stages, because the kiosk enabled web site will then be running on the central web servers and we are assuming the existence of network connectivity during these phases. However, IIS will always be necessary for the Mexican kiosks because even after the pilot these kiosks are expected to dial in on demand and so will not always be connected to the central web servers.

Also note that Netkey software is necessary for all phases. Also, Netkey does run on windows 2000.

20.3 Mexico Kiosk Configuration

Windows NT server 2000 will be required for each kiosk as local ASP pages must be processed. During the pilot phase, it may be possible to use NT 2000 in conjunction with MS Personal Web server. However, Netkey does not recommend the use of personal web server in a production environment.

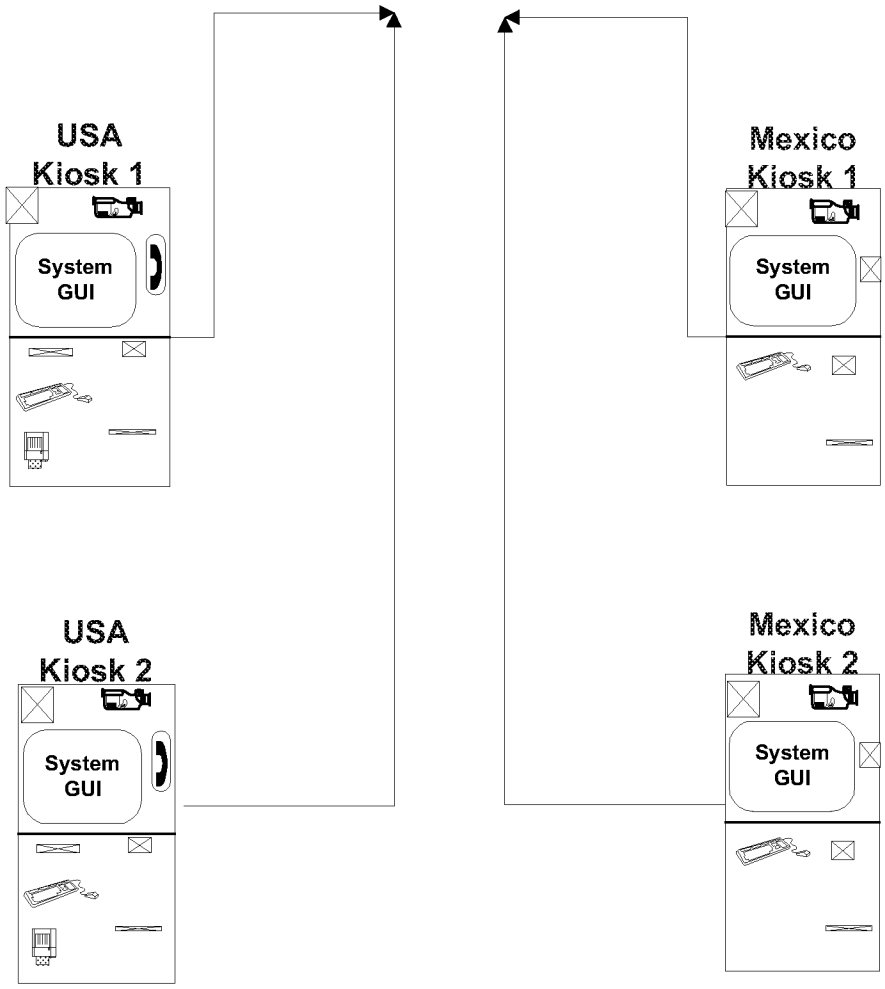
FIGURE 4. Mexico Kiosk Configuration



20.4 Beta Phase Kiosk Data Management

- Manually collect data from all kiosks. (4 access replicated databases and all compressed video files) Zip drive is used to copy data from kiosks hard drive and onto zip disks.
- Encrypt each replica access db (Access function)
- E-mail all replica db's and video files to admin person (or ftp to location where admin person can get all data from)
- Admin person decrypts db's (Access function)
- Admin person runs routine (to be developed and stored within hub access database) to synchronize replica db's and hub access db
- Admin person runs routine (to be developed and stored within hub access database) that determines what specific video files should be forwarded to each of the kiosks
- Admin person encrypts each synchronize replica db (Access function)
- Admin person distributes (through E-mail to one or more people) each updated replica db and the appropriate video files for each of the kiosk locations
- People at kiosks (that will receive the updates from admin person) update local kiosk replica db and video files
- Employees at Mexican stores can run reports from same replica access db; or,
- if it is preferred that admin person only has access to the temporary administrative reports program of beta phase, they can be handed the reports on paper or word file format by person(s) distributing the updated files to each Mexican kiosk location

FIGURE 5. Beta Phase Kiosk Management

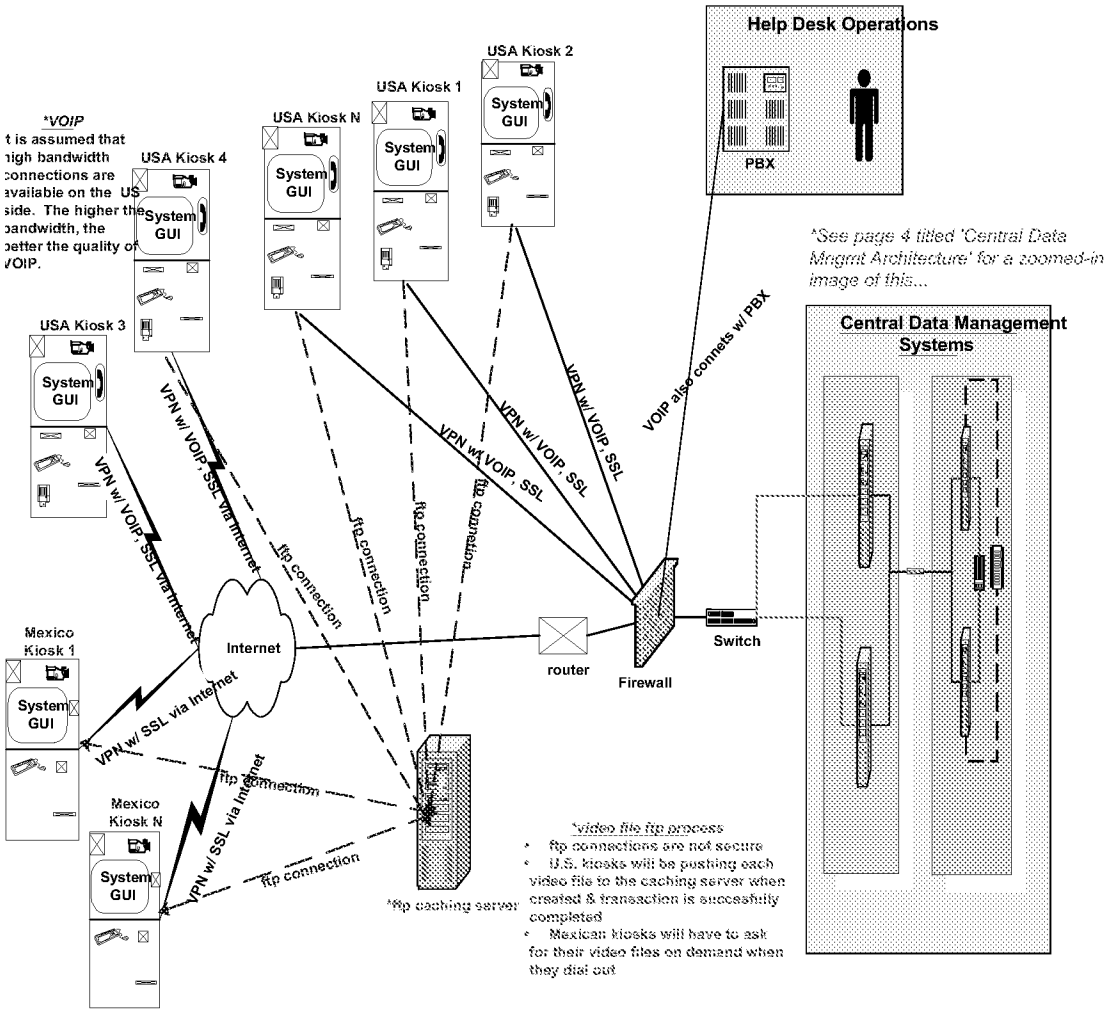


20.4.1 Beta Phase Assumptions

- All kiosks will have some downtime, during which the 4 replica and the hub access databases are all synchronized and the updated files are distributed.
- This downtime will be kept to a minimum. At best, it should take no more than an hour or less to Synchronize and distribute all files to each kiosk, assuming there is a person assigned to each kiosk to initially forward to and then wait to accept the updated files from admin, through E-mail. Connection to the internet and E-mail accounts is another assumption implied here...
- It is further assumed that such downtime will occur only for those kiosk locations that will be operating on a 24 hour per day schedule. However, if operational hours (i.e. at the Mexican kiosk store locations) are normal daytime business hours, the administrative synchronize tasks could occur during non-operational hours and therefore no downtime would be experienced for these kiosks.

20.5 Network Diagram

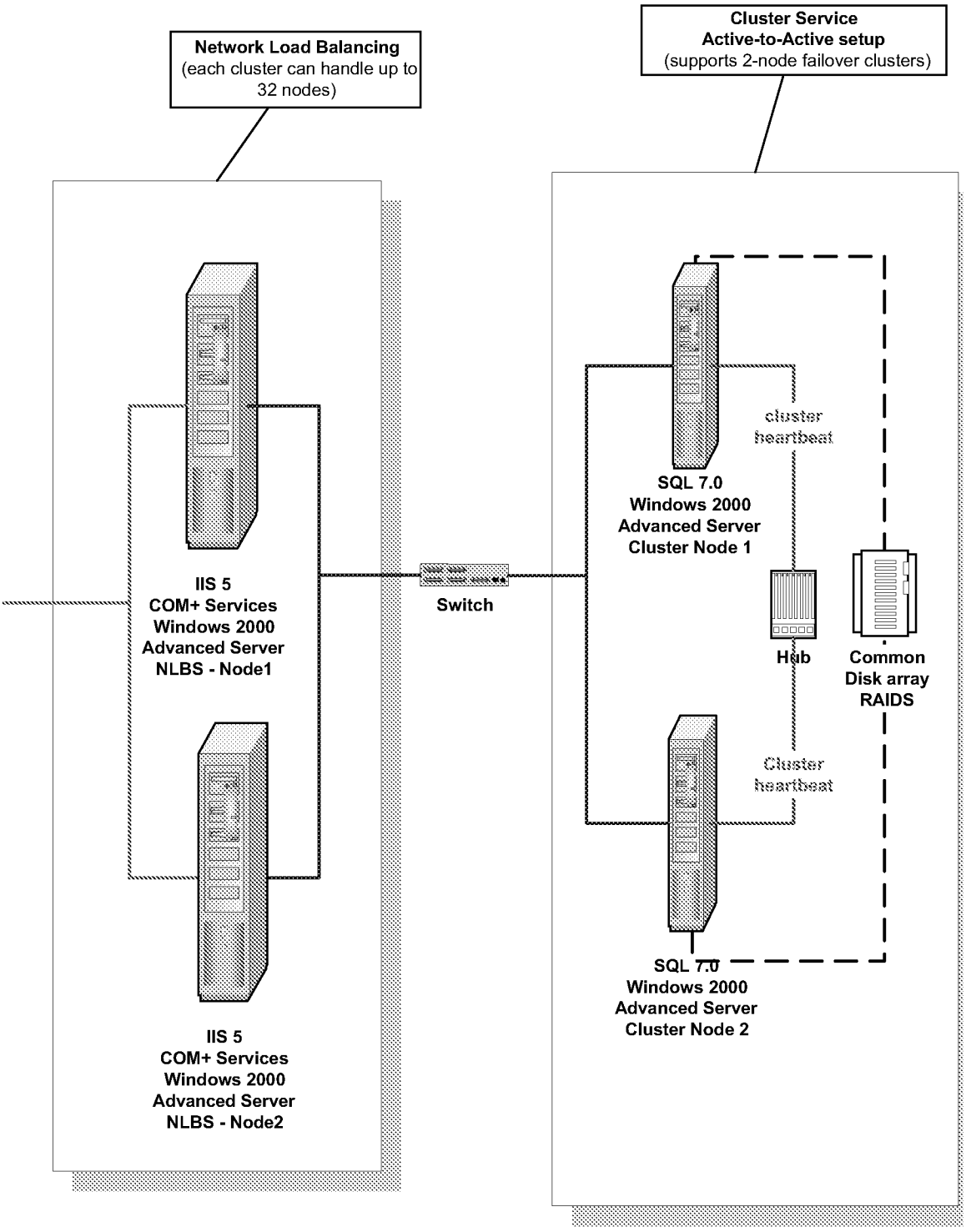
FIGURE 6. Network Design



20.6 Data Management Architecture

The proposed data management systems architecture pertains to the architecture hosting the central web servers, as well as the central SQL Server database, which will hold all transactional data. This database will also be replicated with databases local to the Mexican kiosks, because of the lack of continuous connectivity with such kiosks. In addition, both the web servers as well as the SQL database are presented so that they are part of a cluster. This is proposed to ensure maximum system performance, reliability and scalability.

FIGURE 7. Data Management



20.7 Network Security

There are essentially 2 forms of security for the web; physical security and software security. Physical security takes the form of firewall servers. These protect internal systems by limiting access to

authorized users. Software security takes the form of password protection, Secure Socket Layers, and Virtual Private Networks. These various security measures work in conjunction with each other and will all be used in securing the EnContactoYA kiosk application. Each are briefly explained below with details on how they will provide security for EnContactoYA.

20.7.1 Firewall Servers

Firewall servers are used to provide protection when users outside a network need to gain access to information within the network. The firewall is configured to identify users and prevent access to those individuals they don't recognize. The configuration for EnContactoYA includes:

- VPN Gateway

It is not necessary that a firewall is placed at the switch between the web servers and SQL servers. All such servers are located behind the first firewall and also within the VPN, so the additional firewall is not necessary. However, servers located at the hosting facility will require firewalls between the servers and the outside world (internet).

20.7.2 Virtual Private Network

Information is encoded and divided into “packets” to more quickly and efficiently send information over the Telco lines. The firewall at the other end receives the packets, rearranges them, and decodes them for the user. (The same process works in reverse.) VPN protects EnContactoYA against internet traffic and ensures data integrity from point to point.

A VPN or Virtual Private Network implementation, in addition to implementing the SSL protocol, is suggested for the EnContactoYA solution for a couple of reasons:

- First, it provides for a very secure network. Since money transfers are one of the major transactional processes the ECY system will include, a secure network is a must. By implementing a VPN, all traffic through the network is specific to the EnContactoYA system. No data is exposed to the internet or the world wide web. By implementing the SSL protocol within the VPN, a hacker would have to break first through the VPN and then additionally through the SSL layer. This implementation makes for a very secure network infrastructure.
- Second, the VPN implementation supports the requirement of being able to recognize which of the kiosks within the whole network a call to the help desk is coming from. It is our understanding that this is one of the features that ECY would like to implement as part of this system, so that if a customer picks up the phone to call the help desk, the operator on the other side would be able to recognize exactly which node (kiosk) the call was coming from. It is possible to systematically determine the IP address of the kiosk the call is coming from, when such kiosks are part of a VPN.

The vendors or products to use in implementing the VPN will differ upon the locations of the kiosks. There are several network infrastructure providers that can build and support a VPN network. Cisco, NetSpeak, Telogy are just a few of them. However, based upon the locations to be used for the ECY network, one vendor might be better than the rest because of service availability and/or cost.

In general, a VPN may be implemented through hardware, software, or the combination of both. Usually, each vendor that would have the service availability in the specific locations, would also be providing their own solutions including most likely their own hardware and software components.

It is important to note that if no service availability exists in the final kiosk locations throughout the US and Mexico, or just the US where the connections need be constant, some system architecture changes will most likely be necessary. We feel confident however that the targeted locations, such as the state of California, will have the necessary network infrastructure services available.

The EnContactoYA application itself needs be designed so that it works regardless if it is implemented within a VPN or not. This is true even if E-Commerce features are later on incorporated into the ECY solution. The biggest change that will have to happen in case a VPN implementation is not followed is probably a change in developing the part related to being able to determine what kiosk the call might be coming from to the call center.

SSL, which as mentioned is also recommended for the ECY system, is supported within the windows platform. IE 5.0 is recommended for use, although IE 4.0 and above could support the SSL protocol as well. Also as mentioned earlier, a hacker would have to break though the VPN first, before they took a chance at trying to compromise any certificates. Certificate Management will all be implemented within the VPN. The Microsoft platform does support Certificate Management.

Some connectivity providers in the US maintain secure VPM networks for a very competitive price, eliminating the need for expensive hardware and software at each US kiosk location. It is assumed that these same VPN providers will NOT be available in the Mexico market. However, it is simply a matter of obtaining compatible VPN hardware and securing local internet connectivity to establish a connection to your US based VPN provider.

20.7.3 Secure Socket Layers (SSL)

SSL is an encryption technology that scrambles a message so that only the recipient can unscramble it. URLs that begin with “https://” are using SSL. To implement this kind of encryption technology, SSL must be enabled on the Web server (Server Side SSL). But even if SSL is on the server, it'll only work with SSL-friendly browsers (Client Side SSL). Transmission of highly sensitive/private information (e.g., the Financial Industry) is encrypted to 128k. SSL will protect EnContactoYA users from internet traffic.

20.8 Hosting

20.8.1 In-House

In-House Hosting **EnContactoYA houses all hardware and performs system administration/support on-site**	
Pros	more cost effective in the long run provides most predictable security (unauthorized personnel may have access to your server if it's located off-site at a “data center”) immediate response to need for hardware fixes and changes system administrator already in place for other computer support/maintenance system administrator and web master can easily administer changes to system need to hire someone with expertise in NT and hardware anyway fastest way for call center to access the application T1 speed is generally fast enough for external audience to access the application
Cons	system administrators require very specialized skills (SQL database, application servers, connectivity, account administration, security)

20.8.2 Shared Server Hosting

The use of shared server space is not truly an option, as ISP typical will not allow custom application to exist on hardware used by several customers.

TABLE 6. Shared Server Hosting

Shared Server **ISP houses hardware; EnContactoYA provides system administration / support**	
Pros	Added network reliability and speed. Inexpensive
Cons	possibly less reliability and slower access speed for internal call center ISP may not allow an application of this size to run on a server with other customers reduced physical security Not really an option - ISP won’t allow custom applications

20.8.3 Dedicated Server Hosting

Dedicated hosting provides an isolated environment for business web sites. A dedicated server provides faster access and greater flexibility in running applications by allowing businesses to take administrative control of their web site. Customers provide the content and administration; The ISP provides the management, architecture, hardware and software necessary to deploy a high performance scalable site.

TABLE 7. Dedicated Server Hosting

Dedicated Server Hosting **ISP houses hardware and system administration; EnContactoYA provides application administration**	
Pros	ISP provides server space and hardware maintenance more immediate response to server maintenance needs increased network reliability and speed (bigger bandwidth) for external audiences EnContactoYA personnel (webmaster) and system administrator can administer most software changes remotely through VPN increased hardware expendability with less cost (changes can be made as needs change with minimal cost and down time)
Cons	expensive possibly less reliability and slower access speed for internal call center some redundancy in personnel (ECY will already have someone fluent in NT) mission critical data stored in a physically remote location extra reliance on TELCO infrastructure to keep ECY running potential network lagtimes for ECY staff (an ethernet/LAN is always quicker than WAN applications) (LAN - Local Area Network; WAN - Wide Area Network) reduced physical security for hardware

20.8.4 Server Co-Location

Co-location provides facilities for customers to house their equipment within the ISP facilities equipped with uninterruptible power supplies (UPS), backup generators, air conditioning, network connectivity, and 24x365 security. Customers that own a server can take advantage of the secure, high-speed infrastructure of the ISPs data center while handing over day-to-day management of their site.

TABLE 8. Co-Location

Co-Location **ISP houses hardware; EnContactoYA provides system administration / support**	
Pros	Added network reliability and speed.
Cons	expensive to rent physical space to house servers possibly less reliability and slower access speed for internal call center EnContactoYA still provides system maintenance more expensive to buy or lease servers system administrator has to go off-location for maintenance of servers (less immediate response to server maintenance needs) reduced physical security

20.8.5 Fully-Managed (ASP)

TABLE 9. Fully-Managed (ASP)

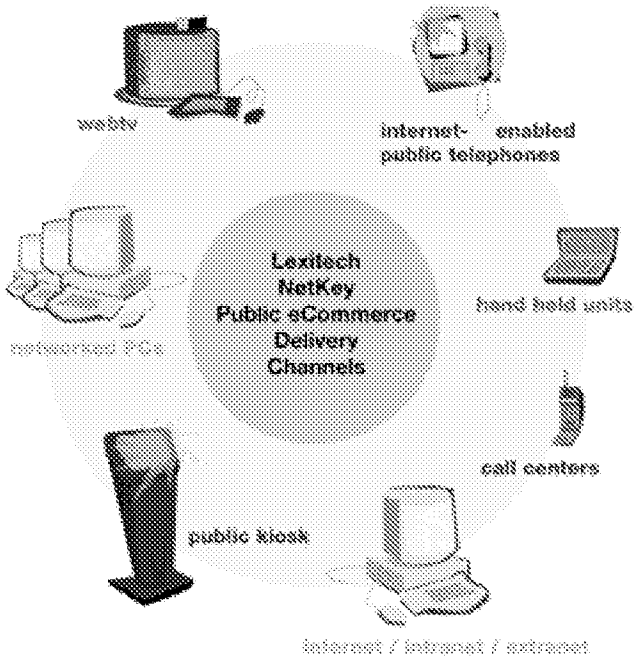
Fully Managed **ISP houses hardware and provides system administration/support**	
Pros	ISP provides server space and hardware maintenance more immediate response to server maintenance needs increased network reliability and speed for external audiences
Cons	very costly “rent” of server space and system administration possibly less reliability and slower access speed for internal call center ISP system administrator requires very specialized skills (SQL database, application servers, connectivity, account administration, EnContactoYA application, security) reduced physical security

21.0 THE NETKEY ENTERPRISE PLATFORM

Netkey will assume project leadership in developing and implementing the kiosk program. We propose to use the patented NetKey Software platform (http://www.netkey.com) as the primary means to control the kiosk client.

All Netkey systems are built from commonly available, industry-standard development tools. Netkey will provide services to insure that the infrastructure is in place to monitor, update, and run the system after the initial 'Beta' development is complete. Netkey will remain your partner to insure that the system is dynamic and continues to perform as originally designed.

FIGURE 8. Netkey Delivery Channels

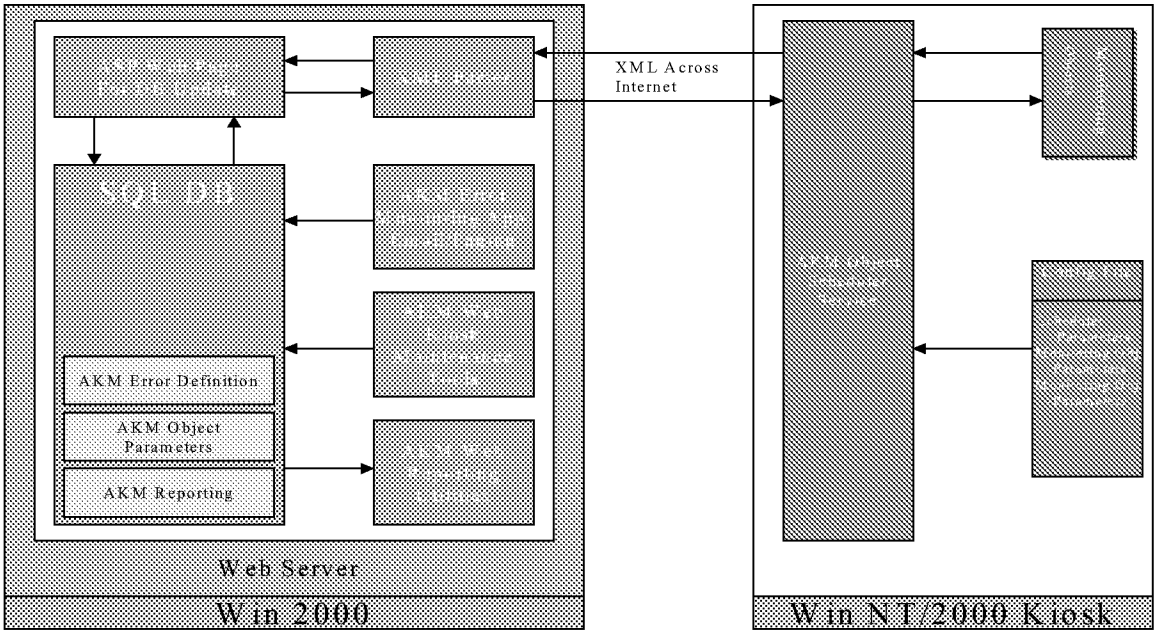


The Netkey Platform is an award winning patented application used to create interactive web-enabled kiosk systems that complete transactions and disseminate information to benefit customers, employees and consumers in every vertical market. In retail stores, the systems allow businesses to generate revenue as customers purchase non-inventoried items on the web. In financial centers, this public access utility creates a more efficient means to manage account information, trade securities and obtain information about services offered. In government agencies and institutions, kiosks help to provide maps for guidance, generals area information, schedules and a more efficient means to pay fees.

The Netkey Application was developed for businesses and institutions of all sizes regardless of their level of technical expertise. The intuitive graphical users interface makes it easy for the most novice web-portal developer (or non-developer) to create web-terminal interfacing units.

21.1 NetKey Enterprise Technical Overview

FIGURE 9. Architecture



22.0 NETKEY KIOSK ENCLOSURE CONSIDERATIONS

The physical enclosure is not a fundamental element during the 'Beta' Phase, however it should be pursued in parallel to Netkey's functionality development. The design of the 'Beta' Kiosk will easily accommodate additional enclosure considerations as they are defined in the next phase.

The EnContactoYA Kiosk should create an immediate visual presence and provide strong brand identity with EnContactoYA. Its appearance should be inviting, encourage trial and communicate a positive association with EnContactoYA. As such, the following criteria will be addressed as we develop the EnContactoYA Kiosk:

22.1 Logos, Signage & Branding

The design of the kiosk needs to be well branded, attention getting and fun. It should attract users and fit into its environment. It is important that the public be able to identify the purpose of this kiosk and be enticed to use it. This is achieved through artwork and branding. The Netkey team has experience with all types of ad signage including vinyl and silk-screening, as well as LED message displays and Luminary signage.

22.2 Human Factors

Human factors elements such as screen glare, viewing angle, touching or typing angle, reach, clarity of purpose, and flow among devices should all be taken into consideration in the design phase of the enclosure.

22.3 Stability

The units must be designed to withstand jarring and should not easily tip over. This is accomplished through a variety of techniques such as material selection, bolting or anchoring the enclosure to the floor/wall or adding ballast to the base.

22.4 Flammability

Kiosks made of non-flammable or flame retardant materials are standard for the potential installations contemplated by the EnContactoYA Kiosk System.

22.5 Safe Openings and Edges

With any materials used, it is important to be sure that edges and corners have a radius or edging for protection. In addition, all openings should be slanted or shielded to prevent entry of foreign objects.

22.6 Power

Power must be isolated from the kiosk. Overall power input to the unit is addressed by developing a plan that includes custom wire harnesses and power strips. Cables inside the kiosk will be properly bundled.

22.7 Safety Regulations

The components incorporated into the unit will be certified by recognized agencies such as UL and FCC. It is important to know that even if all the components are listed, this does not mean that your enclosure is listed. Additionally, some locations such as malls will not allow installation of non-approved electronic devices. When placing kiosks in public environments, such as those discussed for this project, liability and exposure to lawsuits is greatly increased. It is highly recommended that

all safety procedures be performed prior to installation. Kiosk manufactures can file for UL listing of custom enclosures if necessary.

22.8 ADA Regulations

Americans with Disabilities Act (ADA) regulations must be followed. Examples of ADA guidelines to be followed include protrusions, height and reach, wheelchair accessibility, accommodations for the hearing impaired, accommodations for the blind. Compliance with ADA regulations is rapidly become a key concern for kiosk manufactures and enforcement of the regulations escalate. It is advised that ECY chose an enclosure that meets ADA regulations to avoid future complications.

22.9 Serviceability and Reliability

Serviceability and reliability are key to the ongoing success in any kiosk project. This includes day-to-day maintenance issues such as cleaning as well as equipment replacement, upgrades or repairs. Through proper component selection and engineering, many potential maintenance issues can be eliminated or kept to a minimum. A few of the key serviceability and reliability issues we routinely address include convenient front and rear access to components, simple wiring and power supply designs, 'hot-swap' component configurations (for easy replacement) and incorporation of 'off-the-shelf' name brand components that have proven reliable.

22.9.1 Cash Box Accessibility

The kiosk enclosure should be designed in compliance with the cash management procedures instituted by the company in charge of cash removal. Firms such as Brinks, Wells Fargo, etc. each have their own unique requirements with regards to cash box type/dimensions and accessibility. Netkey recommends the selection of a cash management firm prior to kiosk enclosure design to insure compliance with cash management requirements.

22.10 Durability

Netkey and our partners manufacture almost all of our enclosures of steel and aluminum. In some cases, thermal formed plastics are used to achieve a desired look or effect. Metal enclosures last longer and are much more tolerant of abuse and harsh environments than wood enclosures. Flammability is seldom an issue with metal. We utilize a powder coat paint finish that is the most durable color treatment that can be used on metal. This is the same paint process that is used in the automotive industry for truck finishes.

22.11 Style of Enclosure and Footprint

We have developed a variety of techniques to minimize the footprint of the core unit. This enables the kiosk to fit into environments where space is at a premium. The kiosk location (indoors vs. outdoors) and type of application help determine the style of enclosure that is recommended.

22.12 Security

Netkey specified kiosks are designed and manufactured to accommodate security requirements for a wide range of environments. The solutions range from simple locking systems to specially engineered alarms that are wired to a building security system.

22.13 Cash Management

EnContactoYA will utilize the services of a third party cash management organization. The Creation of a custom Kiosk enclosure containing a Cash Acceptor may require knowledge of the specific vendor chosen due to peculiarities in cash management procedure, Security requirements, etc. Prior to design of the kiosk, Netkey may require a decision in this regard.

Three national cash management organizations have been identified that ave experience working with the type of cash acceptance equipment proposed by Netkey:

- Armored Transport, Contact: Bill Brooks (302) 762 5444
- Brinks, Contact: Glen Mason (972) 753 8730
- Dunbar, Contact: Gary Gischel (410) 229 1926

The use of a cash management service is not required for beta phase, as ECY staff will be on-site at all times. However, the selection of a cash management service firm should be made as soon as possible to identify any particular needs or requirements the firm may have in terms of cash box size, type, or dimensions so that the ECY kiosk enclosures can be designed to accommodate these requirements.

23.0 NETKEY PROPOSED PROCESS FLOW DIAGRAMS

Netkey has investigated the use of Biometric facial recognition as a means of user authentication. Realization of this security methodology would significantly reduce the business process needed to support customer service needs. Proposed process diagrams will be produced that formalize the alternative design. Netkey will produce the proposed process diagrams subsequent to project inception as a component of the detailed specifications document.

IV. THE NETKEY APPROACH

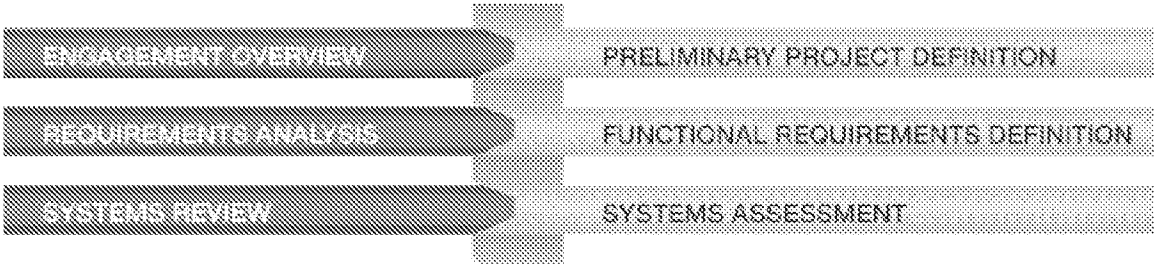
24.0 OVERVIEW

Netkey has been providing services in areas of Self Service Interactive technology, systems management and integration, and database management long enough to know that for any project to be successful, it must adhere to a previously defined and tested process. Our methodology is based on the collective field experience of the professional staff within our organization.

The primary goal of Netkey's methodology is to promote value-driven relationships between our clients and us by consistently providing high quality deliverables that exceed expectations. We dedicate ourselves to the importance of extensive research on a variety of levels, including the discovery of business, organizational and technical goals. We pride ourselves on presenting solutions that best meet our clients' immediate and long-term interactive technology requirements.

To ensure success, Netkey utilizes a standard methodology that can be broadly divided into three subject areas. Each subject area encompasses a clearly defined set of objectives and goals with the purpose of gathering all the information necessary for us to provide you with our recommendations. At the conclusion of the proposed PRA, you will be presented with a detailed report that documents our findings and presents additional analyses and observations. The final deliverable at the end of the study will describe Netkey's recommendations for achieving your objectives.

TABLE 10. Approach Diagram



Netkey will assemble a cross-functional team representing Interactive Kiosk Technology, Creative Services, Systems Management and Integration, Data Management Services and Project Management to work closely with a defined EnContactoYA team throughout the process. All project documentation will be posted to a secure extranet site created by Netkey allowing complete visibility throughout the PRA process. If possible, weekly status meetings will also be held to communicate progress.

The following three core methodology subject areas will be employed for the purpose of the PRA. Further definition of each of these subject areas and their corresponding deliverables are described in the paragraphs that follow.

24.1 Engagement Overview

The purpose of the Engagement Overview is to provide a foundation by exchanging specific information necessary for additional stages of the study to commence. It will allow Netkey and EnContactoYA project teams to build relationships while acquiring vital project-specific information and identifying potential risks. The Engagement Overview consists of a variety of tasks, including:

- Identification of team members, roles and responsibilities.
- Identification of key issues, fundamental requirements.
- Review of project deliverables.
- Presentation of assessment schedule.

At the conclusion of the PRA, the Requirements Document deliverable will contain a Preliminary Project Definition section. This section will present Netkey's understanding of EnContactoYA's key issues and fundamental requirements as uncovered during the Engagement Overview. It may also include a list of expectations to be met at the completion of the project, and descriptions of additional partners that will be utilized for the purpose of this study.

24.2 Requirements Analysis

The purpose of the Requirements Analysis phase is to gather pertinent information in all areas that directly affect the project. This analysis will be conducted through interviews and workshops to identify and prioritize all current and future requirements for the EnContactoYA Kiosk Project including:

- Business Requirements
- Functional Requirements
- Performance Requirements
- Data Requirements
- Environmental Requirements
- Organizational Requirements

In addition to interviews and workshops, an extranet site can also be utilized to obtain and synthesize vital information.

24.3 Systems Review

The Systems Review is the subject area of Netkey's methodology whereby members of our project team review all aspects of existing systems for their ability to meet the goals and objectives defined in each category of the Requirements Analysis.

The Systems Review includes high-level discussion sessions involving representatives from EnContactoYA and Netkey. If applicable, the attendees of these sessions will provide combined knowledge of the three areas that make up most technical operations:

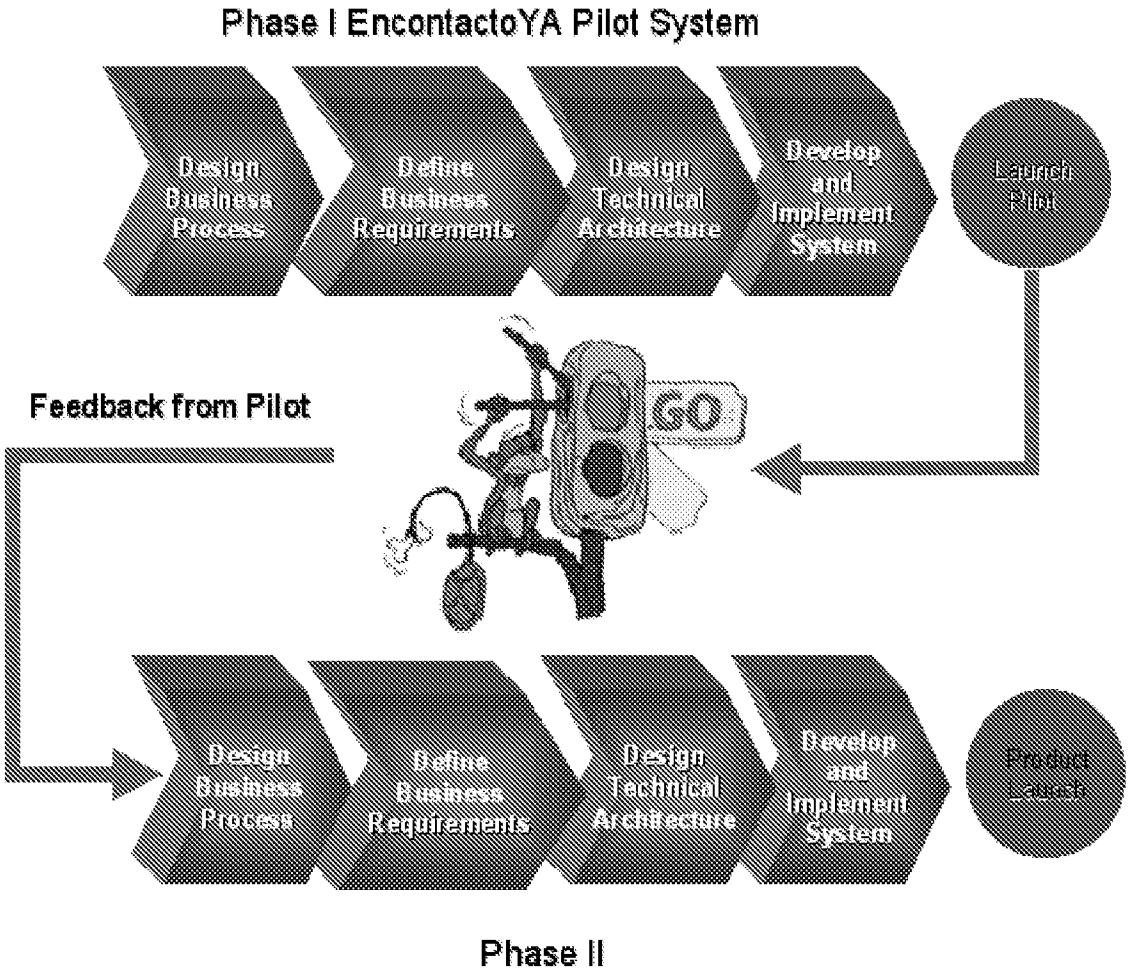
- Interactive Technology
- Database Management
- Systems Management and Integration

Following high-level sessions, subsequent discussions will focus more specifically on the individual areas with one-on-one interaction among appropriate individuals. At this time, representatives of Netkey may be required to have access to EnContactoYA's systems under the supervision of EnContactoYA technical staff. The following paragraphs provide more detailed information about these discussion sessions.

25.0 ENCONTACTOYA PHASED DEVELOPMENT PLAN

Netkey uses a phased approach to produce development that can be characterized by the diagram below. The results of the first phase will feed the second phase to insure the development of an appropriate and usable system.

FIGURE 10. Phased Development



25.1 Phase One Requirements

- No call center
- no connectivity on either side
- zip drives to transfer data
- will have cash acceptors

- focus on customer experience
- 2 US kiosks / 2 Mex kiosks
- may want screen capture device for app evaluation
- audio instructions a must
- encryption for transfers important
- Real keyboard, no virtual boards
- USA employee assistance at kiosk location for first 2 - 3 months only - always there in Mexico
- Spanish audio instructions
- touch screen
- User Interaction monitoring capabilities (abandoned shopping cart)

TABLE 11. Phase One Tasks

Design Business Process	Define Business Requirements	Design Technical Architecture	Design Technical Architecture
• Translate ECY concept into software solution	• Define in detail the specific application elements	• Develop and Install Technology	• Test, train and launch

• Understand ECY Business Plan
• Working sessions
• Review of ECY documents
• Interpret into a process and data model; review with ECY
• Design database; build prototype database
• Design and develop user Interface (UI)
• Review with ECY
	• Define requirements for:
	• Applications
	• Reporting / Analysis
	• Security, Performance, and Control
	• Identify needed processing components and group into applications
	• Write program specifications
	• Design data warehouse and build physical database
	• Review requirements
		• Confirm Infrastructure Design
		  • Development Platform and Tools
		  • Production System
		  • Networks and Telephony
		• Acquire and install hardware/software/ network
		• Refine database design
		• Develop Applications
		  • Client
		  • Server
		• Develop security, backup/ recovery, administrative procedures
		• Design and develop online help / user / technical documentation
			• Integrate Applications
			  • Plan:
			  • Testing
			  • Training
			  • Launch
			• Conduct testing
			• Train ECY staff
			  • Call center staff
			  • ECY management / administration
			  • ECY Technical support
			• Set up help desk
			• Launch ECY Pilot

• Process and Data Model • User Interface • Demonstration Database	• Requirements Definition • Application Architecture • Program Specifications • Data warehouse	• Installed Technical Architecture • System administration procedures • Working ECY system	• Test Plan • Training Plan • Launch Plan • System test results • Trained ECY staff • Support desk

25.2 Phase Iteration Tasks

TABLE 12. Phase Iteration Tasks

Design Business Process	Define Business Requirements	Design Technical Architecture	Design Technical Architecture
• Design ECY Interfaces	• Design ECY functional capabilities	• Complete technical design for ECY Kiosks	• Develop and Launch ECY application

• Obtain feedback from pilot
• Hold working sessions to develop UI
• Design ECY community content functions
• Design advertising management
• Identify and select E-commerce partners
• Add to data and process model
• Prepare ECY Visual Design (i.e., look and feel)
	• Design User Interfaces:
	•
	• Identify functional capabilities and reports/analysis for:
	  • ECY admin
	  • Consumer Points Program
	• Design interface to partner(s)
	• Expand physical database design
	• Design functions for:
	  • Advertising management
	  • Help facility
		• Re-confirm Infrastructure Sizing
		  • Production System
		  • Networks and Telephony
		• Select and acquire other hardware/software
		  • Call center
		  • Accounting
		• Develop specifications
		• Build user interface and conduct initial usability testing
		• Develop application code
		• Develop online help / user / technical documentation and link to interface/applications
		• Develop content for community links
			• Plan:
			  • Testing
			  • Training
			  • Launch
			  • Ongoing support
			• Test application
			  • Functionality
			  • Usability
			  • Speed
			• Train ECY staff
			• Ongoing technical support team
			• Launch ECY application

• Kiosk UI Design • Updated Process and Data model	• Update Requirements Definition • Updated database design	• Installed production system • Specifications • Application code • User Interface • Working kiosks	• Test Plan • Training Plan • Launch Plan • System test results • Trained ECY staff

25.3 Final Phase Requirements

- 500 kiosks
- 100,000 customers
- 2 transactions per month per customer
- 30 transaction per day per kiosk (per Louis's calculations)

Calculations based on 500 kiosks, 2 transactions per person per month, for 100K customers, come to about 14 transactions per day per kiosk

V. CONCLUSIONS AND NEXT STEPS

26.0 WORK PLAN

TABLE 13. Work Plan

Task	Objective	Description
1.0 Set business objectives	Confirm vision for processes and systems and set benchmarks against which success will be measured	• Meet ECY management team to review vision • Set performance criteria for each process
2.0 Develop business design		
2.1 Develop high-level process definition and flow diagrams	Define and document processes at high level	• Confirm/set objectives and performance measures for each process • Identify alternative ways of conducting processes • Document proposed processes

2.1.1 US Kiosk	Define and document the process in detail	• User authentication
		• Record Video
		• Capture Facial Image
		• Send Video w/o funds
		• Transfer Funds
		• Transfer Funds w/Video
		• View account information & transaction history
		• Customize Interface (news, background, etc.)
		• ·Personalization:
		  • display specific background
		  • show list of pending transactions
		  • start playing video (should probably specify some time to wait before starting playing here…)
		  • Show personal hometown news (at button touch)
		  • Hometown news availability
		  • By town, or
		  • by kiosk general location if no specific local town news available
		• Print receipt

2.1.2 Mexico Kiosk	Define and document the process in detail	• Authentication • View Video • Receive Funds • Record Video • Send Video • Print Receipt

TABLE 13. Work Plan

Task	Objective	Description
2.1.3 ECY admin	Define and document the process in detail	• Authentication • Access to all other interfaces from a centralized location • Account management (user, customer service, administrative, etc.) • Network monitoring • Kiosk monitoring and administration • Content management (local news)
2.1.4 Exchange House	Define and document the process in detail	• Authentication • Customer account access • Transaction processing (distribute funds and update account)
2.1.5 Call Center	Define and document the process in detail	• Authentication • User account access • User account modification/creation • Transaction maintenance
2.1.6 Content Management	Define and document the process in detail	• Create a new account • user log-in • record a video • transfer funds • access hometown news • *Other not yet defined features
2.1.7 Reporting	Define and document the process in detail	• Registration metrics • User profiles • Usage by location • Relationship reports ($transferred to whom?) • Call center stats • Average time at kiosk • suspicious or excessive transfers • Sales reports • Points or Loyalty program reports • Error reports • Reliability reports • Complaints • Reconciliation reports • Exchange house vs. EnContactoYA • Cash drop vs. transfers • Location demand reports (future location demand) • Exit point reports (abandoned shopping cart analogy)
2.2 Review with ECY team	To review the high level process design with ECY management	• Review process narratives and flow diagrams for each business process
2.3 Develop detailed process design	Expand process design to detail level	• Detailed process design document
2.4 Review detail design with ECY management	Review detailed design and receive feedback	• Review flows and narratives • Revise accordingly
2.5 Prepare process design document	Prepare comprehensive design document that explains the ECY application in sufficient detail to begin construction	• Complete process documentation

TABLE 13. Work Plan

Task	Objective	Description
2.6 Review design document with ECY	Obtain feedback on proposed system design and processes	• Review with ECY • Review with focus groups
2.7 make final revisions	Incorporate information from ECY and third parties	• Review feedback with team and determine how to incorporate • revise design document
3.0 Define Business Requirements		

3.1 Design technology architecture	define the design concepts that will underlie the system	• Design concepts to be used for:
		  • User Interface
		  • processing
		  • Data/video transfer
		  • system environment/common functions

3.2 Define and document needed system functions	Define the capabilities the software must have to collect, process, and exchange information for: • Accounts • Transactions • Administration	Define and document requirements for each process: • User interface • transaction processing • work flow functions? • data input • data retrieval • reporting • analysis and performance measures • interfaces to systems in which data must be exchanged Define which functions will be needed by each user community
3.3 Develop logical data design	Identify the data the system must collect and retain	• Identify data elements and their attributes • define logical groupings of related data • define the relationships between the data
3.4 Review initial business requirements	Obtain feedback from ECY	• Meet with ECY staff to review each application area • Change design accordingly
3.5 Define performance, security, and control requirements	Identify other requirements the system must fulfill	• define performs parameters (max users, response time, etc.) • define security requirements (data access limitations, internet/internet access) • define control requirements (control for the change of information and verification that exchange occurred correctly) • define suspicious and excessive transfers monitoring requirements
3.6 Complete business requirements document	Prepare a single document that defines all systems requirements in a form that can be used to develop the technical design for the system	Complete documentation • overview for management • major applications and sub-modules • review of applications by user community • logical data model • interfaces • reporting and analysis tools • communications requirements

TABLE 13. Work Plan

Task	Objective	Description
3.7 Update previous requirements for upcoming tasks	Ensure budget and staff resources available as planned	Assist ECY to update resource estimates and timing of resources as needed: • budget • staff • facilities
3.8 Conduct final reviews	Review final requirements document	• present final document to ECY • conduct detailed review with project team
4.0 Develop Technology		
4.1 Develop blueprint for technology	To develop an overall plan for what technology will be required	Identify technology components required: • Hardware • Database • Application software • Systems software • Network and communications software • Development tools
4.2 Acquire necessary hardware and software	Ensure hardware and software for development environment are available within the needed time frame	• define any hardware or software that must be acquired • identify and select vendor(s) • purchase and install • establish operating environment
4.3 Develop detailed systems design	Design software to that programming can proceed in parallel	• Develop programming and documentation standards • design software • Applications • Interfaces • Databases
4.4 Develop physical data design	Develop databases that will be used by applications	• Identify physical data elements • define relationships between elements • define relationships between tables and records • define physical databases and files
4.5 Prepare detailed implementation plan	To guide development and form a basis for updating resource estimates	Develop detailed task plan and schedule for development
4.6 Plan development environment	To ensure that developing, testing, training and production activities can occur in parallel with integrity	Design how development, testing, training, and production environments will be created and maintained
4.7 Review technology architecture	To gain approval for development and implementation	Develop presentation to outline technology architecture, capital investment budget updates, and implementation plan
4.8 Develop application software	To develop and unit test new application software	• Program applications • unit test applications • develop program documentation
4.9 Develop interfaces (i.e. peripherals)	to develop software for changing information with internal and external entities	• program and unit test interfaces • conduct testing with other internal systems • conduct testing with business partners external systems
5.0 Implementation Phase I	To plan for and implement the system	
5.1 Develop user test plan	To ensure the systems tested thoroughly before it is launched	• Completed user test plan

TABLE 13. Work Plan

Task	Objective	Description
5.1.1 Identify testing requirements	to identify all testing required	identify user testing needed for: • applications • interfaces • plan sequence for user unit testing and system integration testing
5.1.2 Develop test cases	To document the test that must be performed	write test cases
5.1.3 Prepare test data	To plan the necessary data before testing begins	plan and create data for testing
5.2 Develop implementation and launch plan	To ensure the system is successfully launched	
5.2.1 Develop launch plan	To launch the project	• Completed launch plan
5.3 Test system	To ensure the system is thoroughly tested before launch	• execute test cases • report errors • retest
5.4 Conduct Pilot	To test the system in a controlled production environment and to gain feedback	• identify region district for pilot • conduct training for field staff • roll out system for pilot • obtain feedback
5.5 Obtain feedback	to gather information from pilot	• Obtain feedback • identify best practices • make changes based on feedback
6.0 Implementation Phase II	To plan for and implement the system	
6.1 Develop user test plan	To ensure the systems tested thoroughly before it is launched	• Completed user test plan
6.1.1 Identify testing requirements	to identify all testing required	identify user testing needed for: • applications • interfaces • plan sequence for user unit testing and system integration testing
6.1.2 Develop test cases	To document the test that must be performed	write test cases
6.1.3 Prepare test data	To plan the necessary data before testing begins	plan and create data for testing
6.2 Develop implementation and launch plan	To ensure the system is successfully launched	
6.2.1 Determine what materials will be needed for training, policies and procedures, and marketing	To identify the materials needed for ECY and call center personnel to understand and use the system	Define material for example: • Training materials • policies and procedures • user manuals • marketing materials
6.2.2 Develop training plan and materials	To develop training materials for each target audience	• identify user community to be trained • identify training requirements • identify training courses • develop training materials • prepare data for training
6.2.3 Develop policies and procedures	To document the business policies and procedures that must accompany the system	• define outlines • draft manuals
6.2.4 Develop marketing materials	To present ECY business and systems	
6.2.5 Develop launch plan	To launch the project	• Completed launch plan

TABLE 13. Work Plan

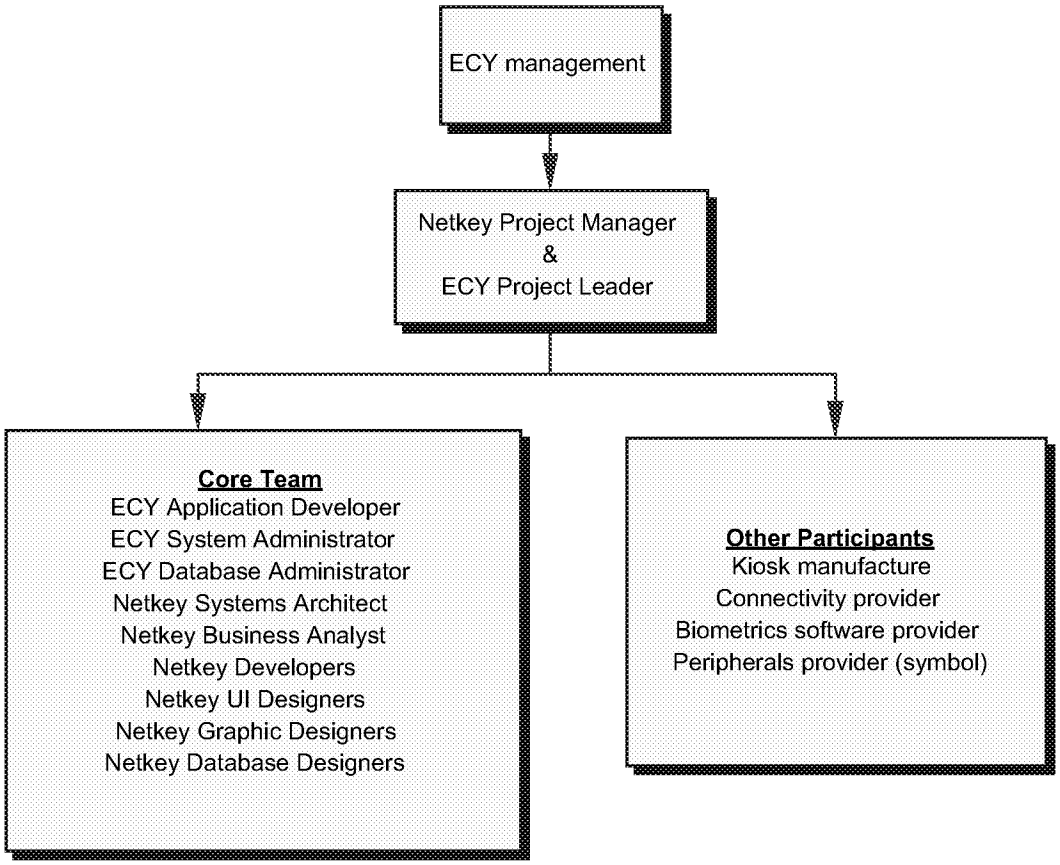
Task	Objective	Description
6.2.6 Develop support plan	To ensure questions and problems are easy to report and are resolved quickly	• Completed support plan
6.3 Test system	To ensure the system is thoroughly tested before launch	• execute test cases • report errors • retest
6.4 Launch Phase II		

7.0 PROJECT ORGANIZATION

7.1 Team Structure

Netkey will develop, with the participation of designated individuals at ECY, a NetKey® web kiosk application. Netkey proposes the development of the ECY application on-sight at our Branford Connecticut facility. ECY would be asked to provide project participants willing to work on-sight with us. The proposed project organization structure is show in the figure below. The roles and responsibilities of the project team are discussed in the remainder of this section.

FIGURE 11. Project Organization



7.2 Roles and Responsibilities

The core project team, led by Netkey consultants, will be responsible for:

- Defining the business design
- Defining the Business requirements
- Testing the resulting system to ensure it closely meets the business requirements
- Developing necessary policies and procedures for ECY operations
- Training ECY personnel
- Application construction
- System testing

- implementation

7.2.1 Auxiliary Team Members

Others may augment the core team as needed. This may include other ECY staff, outside vendor participation, or additional Netkey resources.

7.2.2 Role of Netkey Staff

Netkey will assume the responsibility for:

- Leading the business design sessions
- Documenting the proposed processes in narrative form with supporting diagrams
- Leading the business requirements sessions to define the required systems capabilities
- Documenting the business requirements (data modeling, transactional capabilities, reporting and analysis, and interfaces)
- Development of test plans, test cases and execution of test plan to insure system meets objectives
- Assisting in the development of policies and procedures for ECY system use
- Assisting in the development of training material
- Assisting in the process of rolling-out the system throughout the US and Mexico

7.2.3 Role of ECY Staff

ECY staff will be responsible for:

- Participating in the business design sessions
- Participating in business requirements sessions
- Assisting in the development of the test plan
- Responsible for the development of policies and procedures for ECY system use
- Assisting in the construction of the ECY application
- Assisting in system testing
- Assisting in System Implementation
- Responsible for development of training material
- Responsible for the process of rolling-out the ECY system

7.3 ECY Project Staffing Recommendations

Netkey has identified the following positions required by EnContactoYA to participate in the development of the ECY application.

NT Application and Network Administrator. The NT Administrator is responsible for maintaining the NT Operating System and the hardware. Also responsible for connectivity, firewall and security, and middle-ware support for SQL 7.0 and application.

Required Skills/Experience

- NT 2000 Administration

- Experience in connectivity
- NT Security including firewalls
- various types of middle-ware and programming languages including: JSP, ASP, Java Developer, MIS Plus

Database Administrator. The Database Administrator is responsible for the back-end of the system (the structure in SQL 7.0 that makes up the application) and will be responsible for report creation, writing, and generation. Will help integrate new modules into the application and will work with the Web Master to maintain the front end connection to the application. The DA is responsible for maintaining the integrity of the database.

Required Skills/Experience:

- ASP/SQL
- understanding of data modeling
- application security scheme
- report creation/format
- data mining

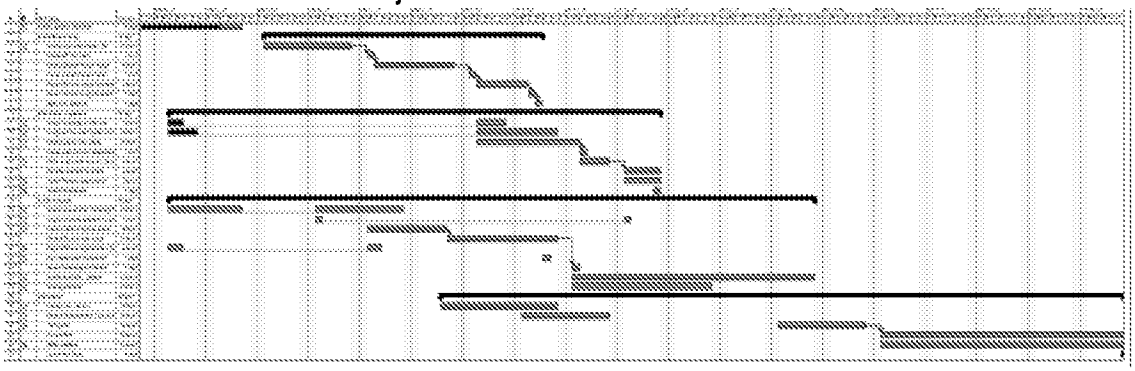
Internet Systems Application Developer. The Internet Systems Application Developer is responsible for the development of the web based applications used to support the ECY system.

Required Skills/Experience:

- Knowledge of Windows NT 2000
- SQL programming
- ASP (VB Script and JScript)
- C++
- Familiarity with Java

8.0 SCHEDULE

FIGURE 12. See attached Microsoft Project file for schedule details.



9.0 COST ESTIMATES

TABLE 14. Man-Day Estimates

	Low	High
Discovery Phase I	**5**	**10**
Business Analyst		
Project Manager		
Business Design Phase I	**25**	**35**
Business Analyst		
Project Manager		
Business Requirements Phase I	**45**	**55**
Business Analyst		
Project Manager		
QA		
Develop Technical Architecture Phase I	**90**	**110**
Systems Architect		
Developers		
Project Manager		
QA		
Implementation Phase I	**50**	**60**
Developers		
User Interface Designer		
Graphic Designer		
Database Administrator		
Systems Administrator		
Project Manager		
QA		
Implementation Phase II	**45**	**55**
Developers		
User Interface Designer		
Graphic Designer		
Database Administrator		
Systems Administrator		
Project Manager		
QA		
Total	**260**	**325**

- Pricing information is an estimate only at this point. Estimates are subject to change as specifications are developed.
- ECY shall be responsible for all applicable taxes, duties, charges and fees attributable to the services and products provided by Netkey or its authorized vendors and representatives.
- Billing shall occur monthly in arrears
- All invoices shall be due within 30 days after the date of the invoice. Any amounts remaining unpaid after the due date shall be assessed a late charge equal to 1½% per month.
- Monthly invoices shall list the work performed, the individuals who performed the work, the number of hours spent on the work and the costs of such work.
- At any time when the amounts totaling $25,000 or more remain unpaid after the due date, Netkey may, in its sole discretion, stop all further work on the project. Work will resume when all amounts due are paid to Netkey. All work stoppages due to nonpayment shall extend the time period to complete the project by the length of the work stoppage.

9.1 Assumptions

- ECY shall provide a Project Manager who will act as a single point of contact and assume responsibilities in the development of this project including establishment of policies and procedures for gaining any necessary ECY approvals.

- Any web pages written by us will be written using Active Server Pages on a Microsoft Internet Information Server 4.0 or 5.0 unless otherwise specified.
- If travel and living expenses are necessary, these expenses will be pre-approved and billed as incurred.
- Netkey will require timely, written notification for all approvals, feedback, and work orders. ECY will provide content and other vital information to Netkey in a timely manner.
- A Project Scope Revision Authorization will be required for work not included within the scope of the contract. Client will approve changes to the schedule or specifications in writing.
- The cooperation and participation of various ECY internal resources will be required to meet certain project time lines.
- A single authority from ECY is requested for communication of feedback and approvals.
- Flowchart, storyboard and visual conceptive changes after approval may result in additional charges.
- The graphics production process will begin only after final approval of the visual concept has been received.
- The above budgetary parameters assume Netkey uses the existing Netkey NetKey® platform to build the User Interface.
- Any Project Scope Revision Authorization will result in revisions to the estimates provided here.
- 1 Man-day is assumed to equal 8 hours
- Work on the project shall begin only after Netkey's Web Development Agreement has been fully executed.

9.2 Netkey Professional Services Rates

The following are standard, published Netkey professional services rates:

TABLE 15. Netkey Rates

Project Management	**$/Hr.**
Project Management	$190.00
Senior Project Management	$225.00
Design Services	
Creative Concepts and Design	$160.00
Web Authoring	$140.00
Programming and Technical Services	
Senior Software Engineer: CGI, Java, Pearl, Queries, and Forms	$175.00
Senior Software Engineer: Database Design and Creation	$175.00
Programmer	$140.00
Testing	$140.00

9.3 Software Licensing

9.3.1 Netkey Software

We propose to use the patented Netkey platform (http://www.Netkey.com/netkey) as the primary means to control the web kiosk user and NetKey® Enterprise AKM features as the primary means to monitor the system hardware environment. In order to meet all the functionalities discussed, it is anticipated that custom configuration of the NetKey® platform will need to be performed.

The following is our standard multiple license NetKey® Pro pricing. Further discussion of initial license pricing based on volume commitments may occur.

TABLE 16. Netkey Pro Pricing Schedule

Number of Copies	Price
Copies First Copy	$449
Copies 2 - 100	$199
Copies over 100	$129

9.3.2 Netkey Enterprise Pricing

The Netkey Enterprise application is licensed on a per installation basis. (A single installation consists of one SQL database instance and a single application server instance.)

- Netkey Enterprise Single Instance licence: $150,000.00

9.3.3 Other Software

All other software components needed for the ECY system will be purchases by, or on the behalf of, EncontactoYA. Netkey is not a reseller of third party software, and thus makes do claims to pricing or availability of recommended software components.

- Microsoft Windows 2000
- Microsoft SQL Server 7.5
- Microsoft Visual Studio
- Microsoft Office (for preparing corporate materials, also includes MS Access)
- Microsoft Site Server (used in later phases for content management)
- Microsoft Media Technologies 7.0 Video CODEC
- Visionics Inc. FaceIt Biometric *Authentication* SDK
- Visionics Inc. FaceIt Biometric *Identification* SDK

9.4 Functional Considerations:

The following system requirements will need custom configuration of our standard NetKey® Software Platform for system-specific development:

- Time out and go to attract loop - NetKey® automatically times out and returns to the attract loop. An administration feature will be configured and integrated into the system administration web-site for ongoing management.
- Integration with proximity monitors - Additional functionality including proximity monitors or floor mats can be added with scripting and development.
- Card swiper integration -- Additional functionality including magnetic card swipe or laser/scanner barcode readers can be added with scripting. This is dependent on the specific implementation - the magnetic stripe must work on a specific page, as for example to fill in the form data, etc. So, this is a per-page implementation. We have the technology to read from the card readers - the database functionalities will require custom configuration and development (database design, scripts, queries, templated reports, etc.).
- Attract loop -- Attract loops can be built into NetKey®. Customizable attract loops are available by using a web page as the attract loop. The page can be a Flash movie, and the contents can come from a database or be otherwise dynamic to be customized for the specific location. The design of the attract loop, and the ability to customize dynamically and administer remotely will require custom configuration.
- Banner advertising outside of web site content window -- NetKey® allows secondary browsers. These browsers can contain banner advertising. The secondary browser can be scripted by a NetKey® controlled browser to update when a new page is loaded and the banner can be associated with the appropriate URL. Additionally, a database-driven advertising management tool will need to be configured and integrated into the system administration website for advertisement management and updating.
- Additional on-line help -- NetKey® allows secondary browsers that can display help-related to specific (or generalized) pages. This contextual help feature will require content creation and custom configuration.

9.5 Other Netkey Services

9.5.1 Site survey

A site survey is ideal for making sure that all preparation requirements are addressed prior to the actual kiosk installation. A technician will visit a site and submit a report listing the preparations necessary to ensure a trouble free installation of the kiosk. Upon completion of this survey, you will be issued a site survey report outlining what (if any) must be done to the site to prepare it for the kiosk installation. This report will also identify the costs we would charge to do the site preparation.

9.5.2 Site Preparation

Site preparation addresses the actual preparation of a kiosk site based on the final report from the site survey. The scope of work to be accomplished depends on the condition of the kiosk site and the range below is a very rough estimate only. Costs will depend on the amount of work to be accomplished to bring the site to a level to receive a kiosk.

9.5.3 Kiosk Installation Services

Kiosk installation addresses the actual installation of a kiosk after the site has been adequately prepared. The scope of work to be accomplished depends on, for example, the form factor of the kiosk and the material used to build the kiosk.

9.5.4 Remedial Maintenance

Netkey can provide complete remedial services including on-site preventive maintenance and repair of kiosks. (Pricing structures are location specific)

Netkey recommends a 5% overage of spare parts on hand for rapid replacement in the field. ECY will need to purchase additional sets of all internal kiosk components for inventory to be stored at Netkey's office that can be used for hardware replacement. Anticipated cost of the spares pool will be determined once the hardware component pieces are firmly established.

9.5.5 Custodial Service

Your kiosk may not need to be repaired bi-weekly, but it may need a cleaning or a paper refill. It is a very convenient service option when you are not available to do the little things necessary to keep the unit looking and functioning at it's best. Please note that this rate is per visit; some locations may require several visits per month to maintain kiosks. Other locations may require only bi-monthly visits. The fee is also dependant on the form factor of the kiosk as well as the material used to manufacture the kiosk.

9.6 Open Issues

- Data Mining (third-party providers)
- Accounting Software

10.0 CONCLUSIONS & NEXT STEPS

EnContactoYA is certainly embarking on an ambitious and exciting project. For us at Netkey, the possibility of being involved in such a project and the launch of the company is also exciting. Both as a company and as individuals, we are looking forward to transforming this vision into a reality.

Netkey is prepared to begin work on the EnContactoYA application starting on as soon as needed.[1] Any other details not covered in this document will be worked out prior to the start of the project.

1. The parties must execute Netkey's form of Web Development Agreement prior to commencement of the project. A draft copy of Netkey's Web Development Agreement accompanies this PRA.

APPENDIX

PROCESS MODELS

US Kiosk Process Flow

For the sake of consistency, Netkey will recreate the EnContactoYA provided process flow diagrams in the format (Gain & Sarson), used by Netkey for the development of the Customer Service process flow diagrams.

Mexico Kiosk Process Flow

For the sake of continuity, Netkey will recreate the EnContactoYA provided process flow diagrams in the format (Gain & Sarson), used by Netkey for the development of the Customer Service process flow diagrams.

Customer Service Process Flows

FIGURE 1. Root Process Graph of subprocess call center

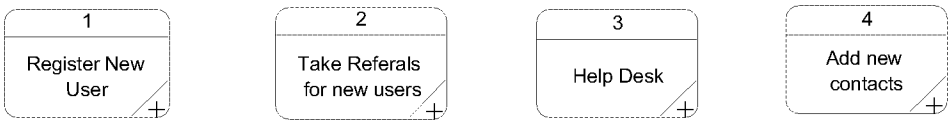


FIGURE 2. Graph of subprocess Register New User

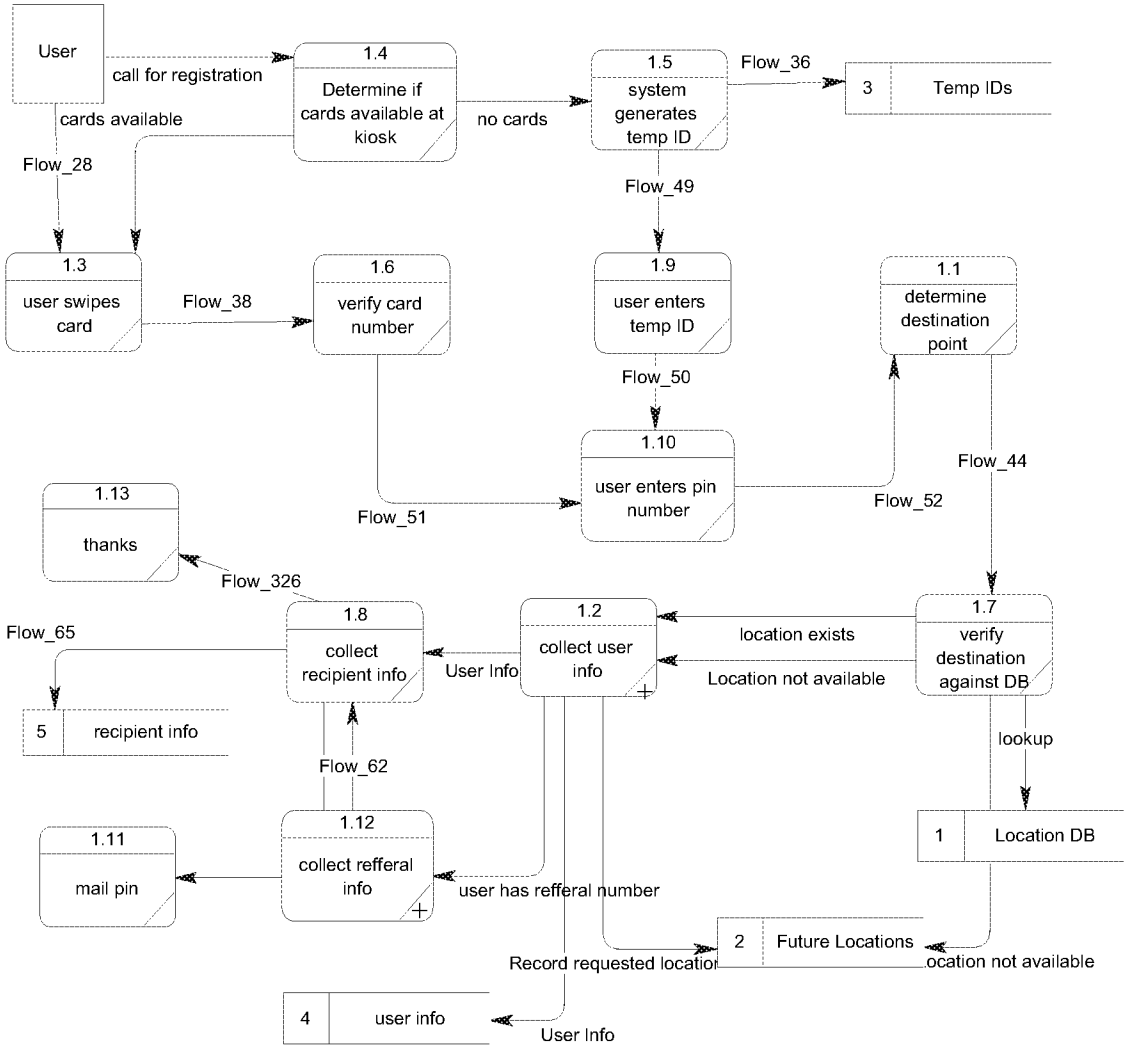


FIGURE 3. Graph of subprocess collect user Info

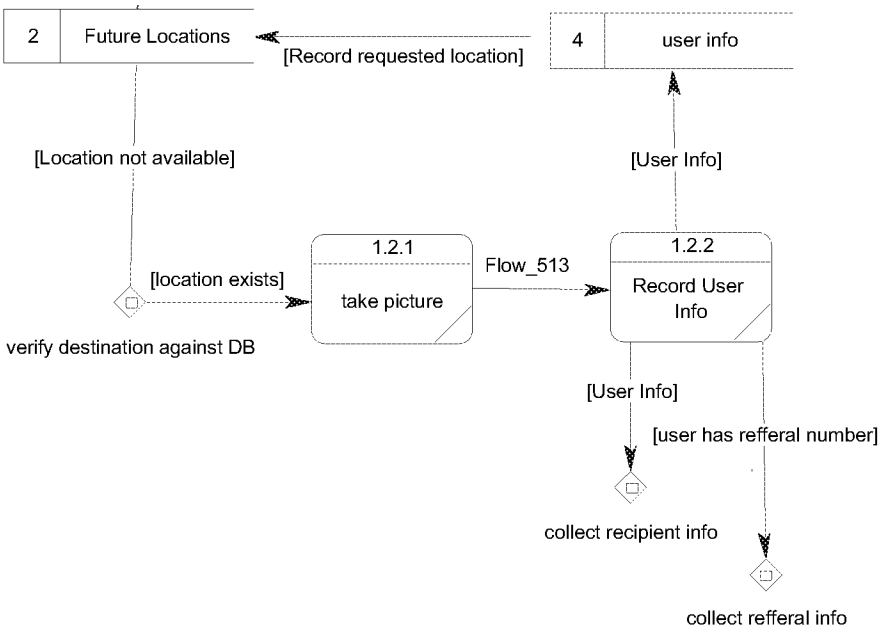


FIGURE 4. Graph of subprocess collect referral info

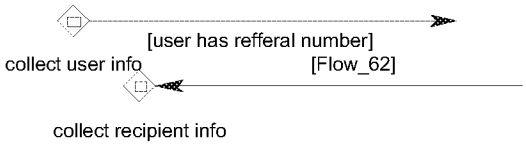


FIGURE 5. Graph of subprocess Take Referrals for new Users

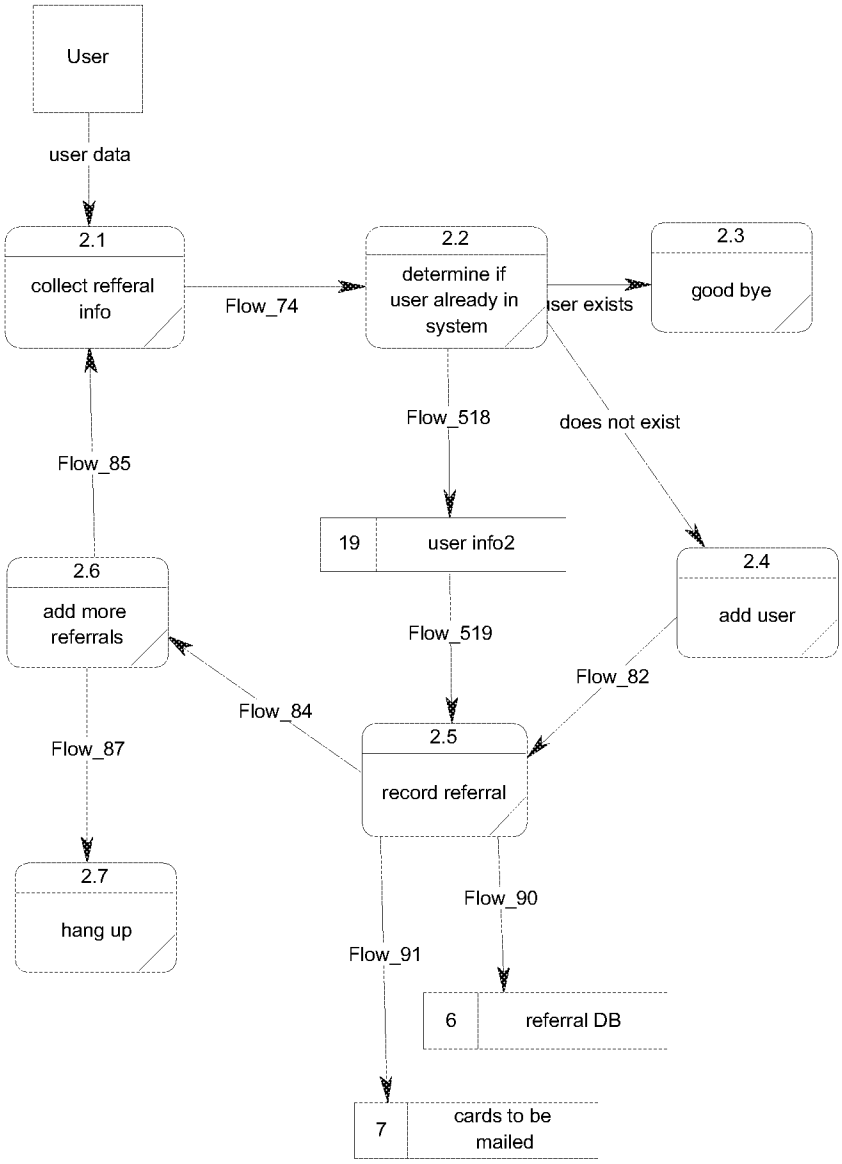


FIGURE 6. Graph of subprocess Help Desk

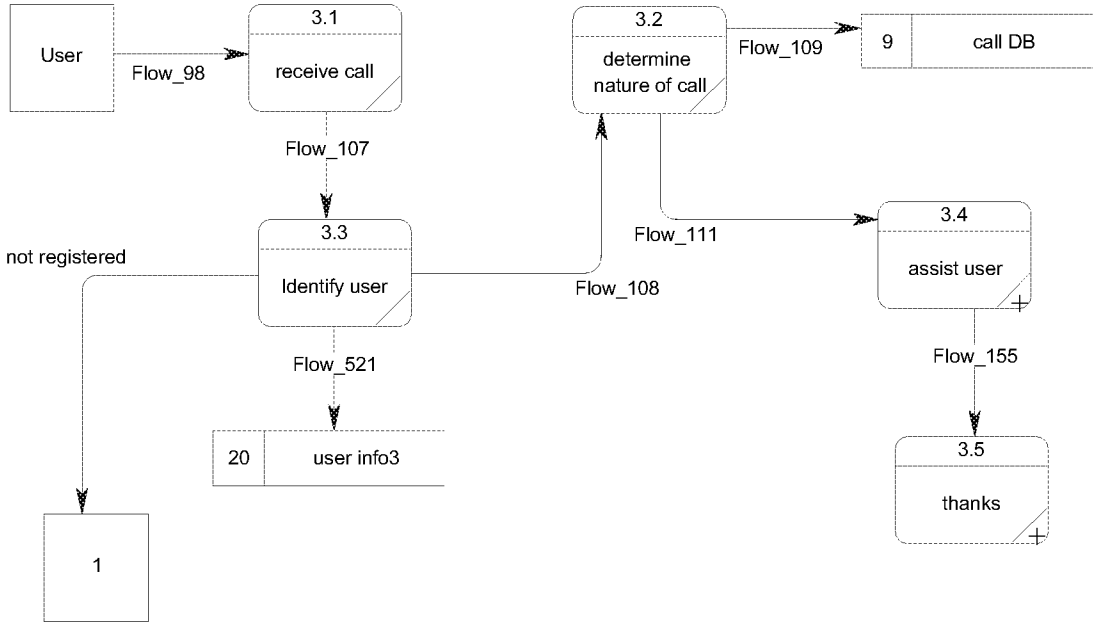


FIGURE 7. Graph of subprocess assist user

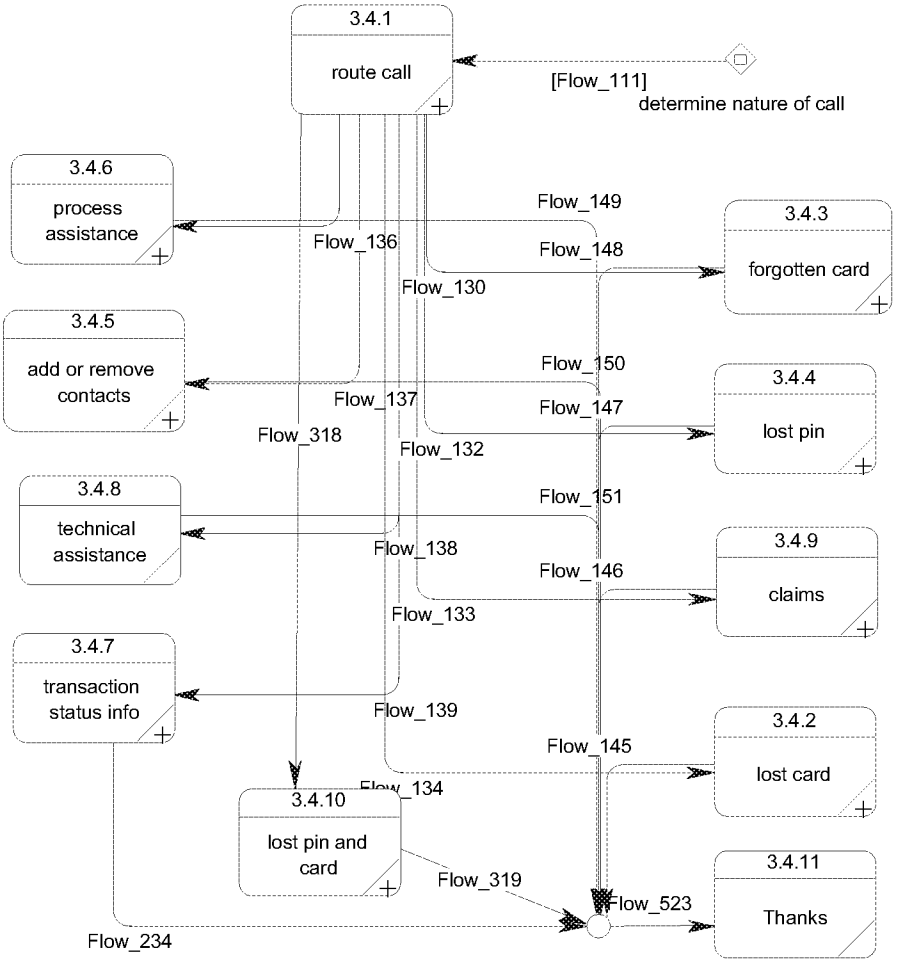


FIGURE 8. Graph of subprocess route call

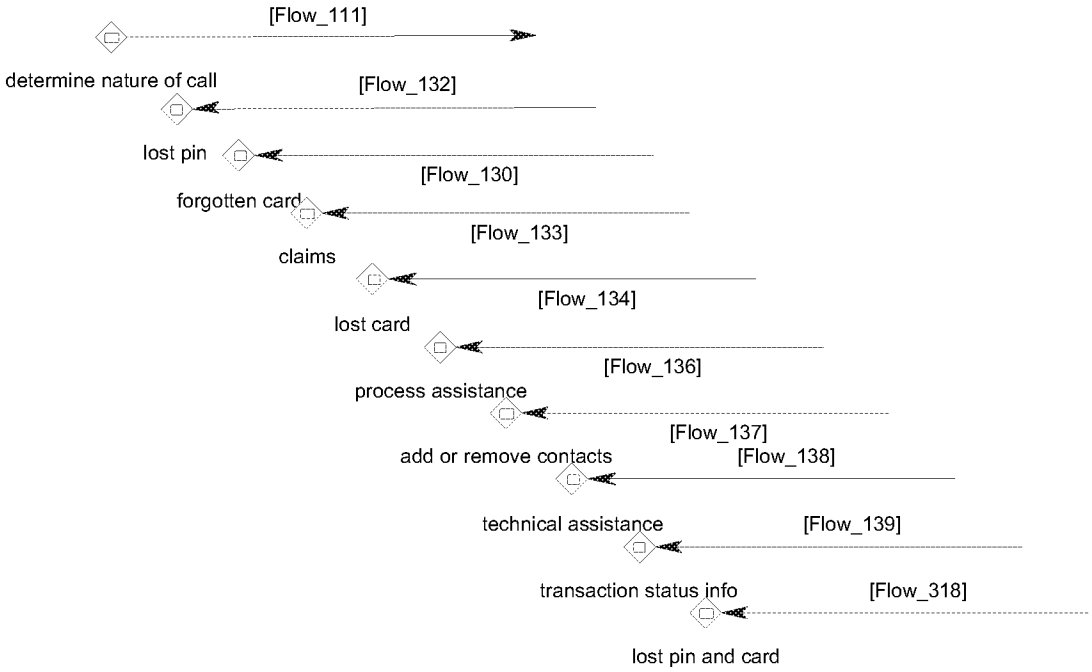


FIGURE 9. Graph of subprocess lost card

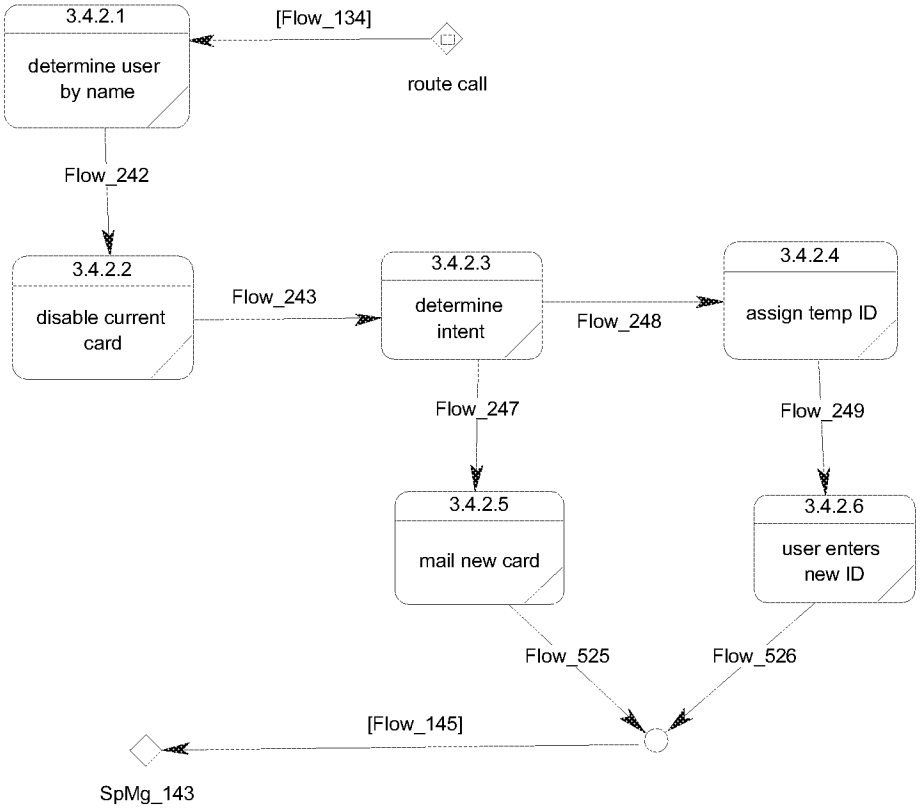


FIGURE 10. Graph of subprocess forgotten card

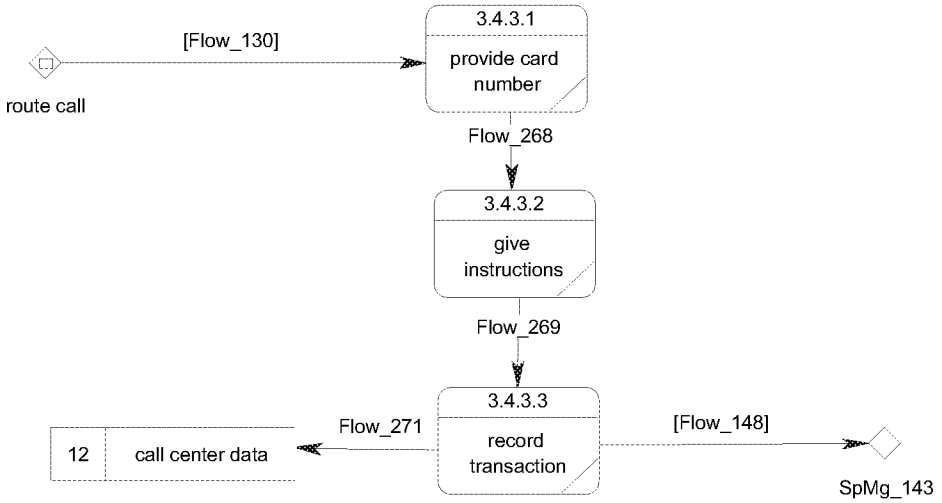


FIGURE 11. Graph of subprocess lost pin

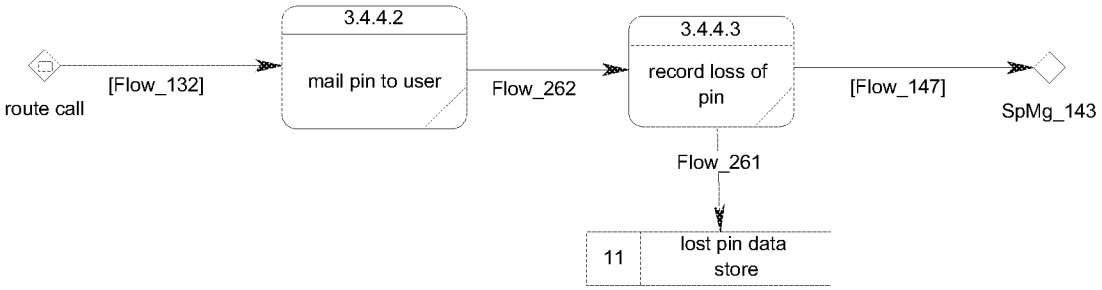


FIGURE 12. Graph of subprocess add or remove contacts

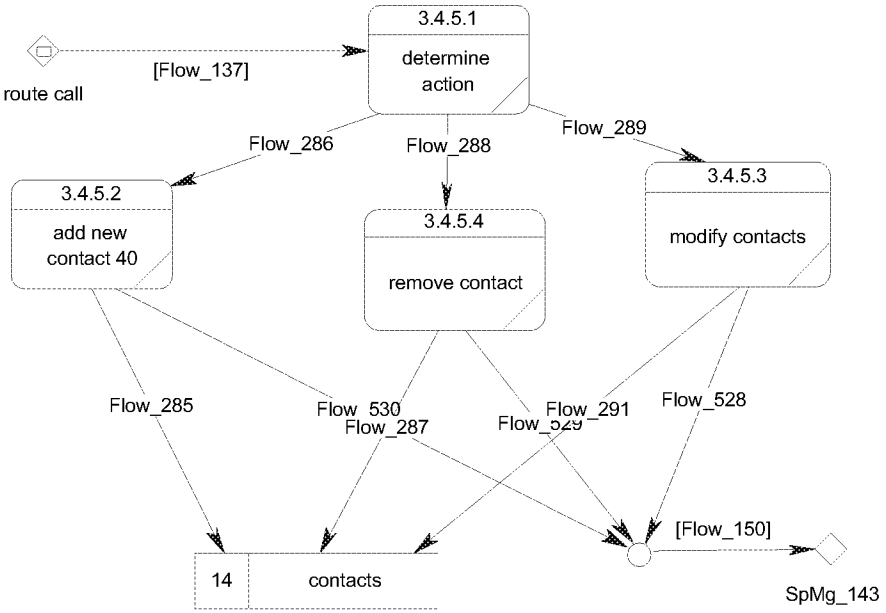


FIGURE 13. Graph of subprocess process assistance

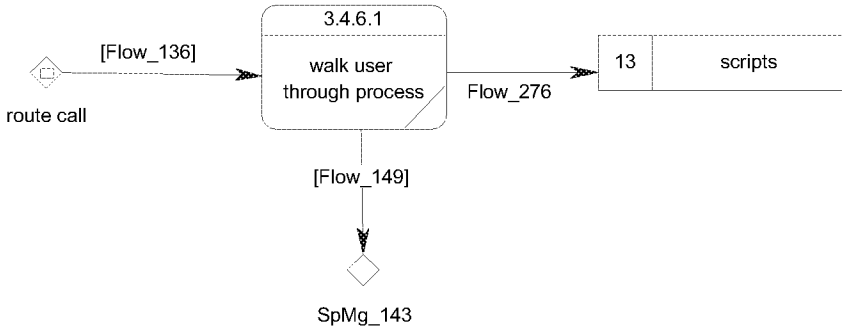


FIGURE 14. Graph of subprocess transaction status info

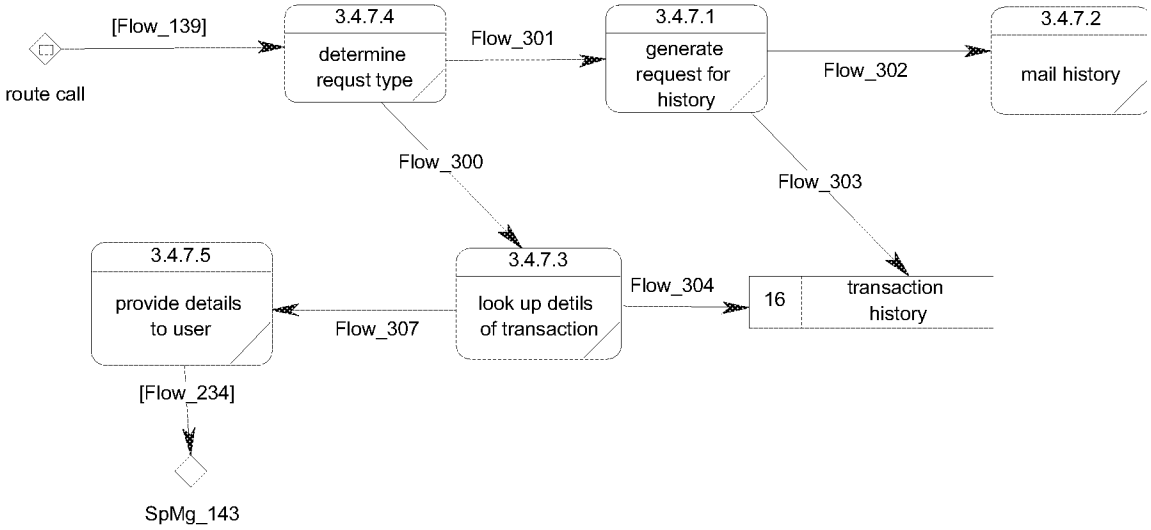


FIGURE 15. Graph of subprocess Claims

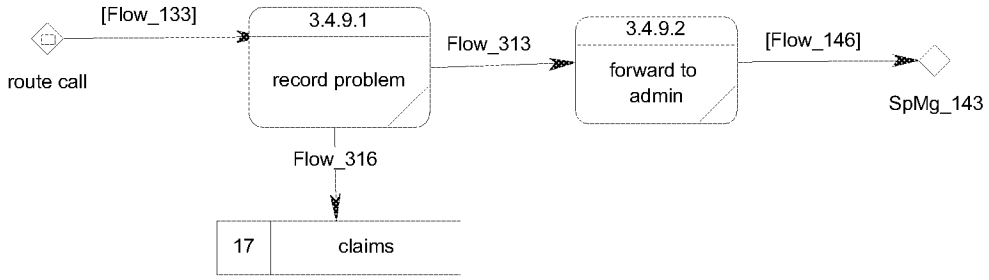


FIGURE 16. Graph of subprocess lost pin and card

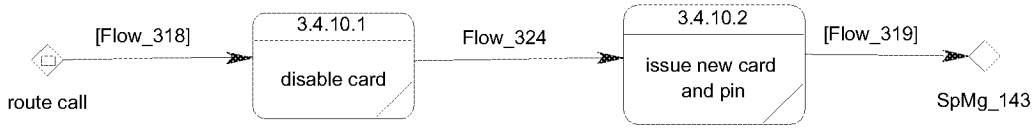


FIGURE 17. Graph of subprocess Add new contacts

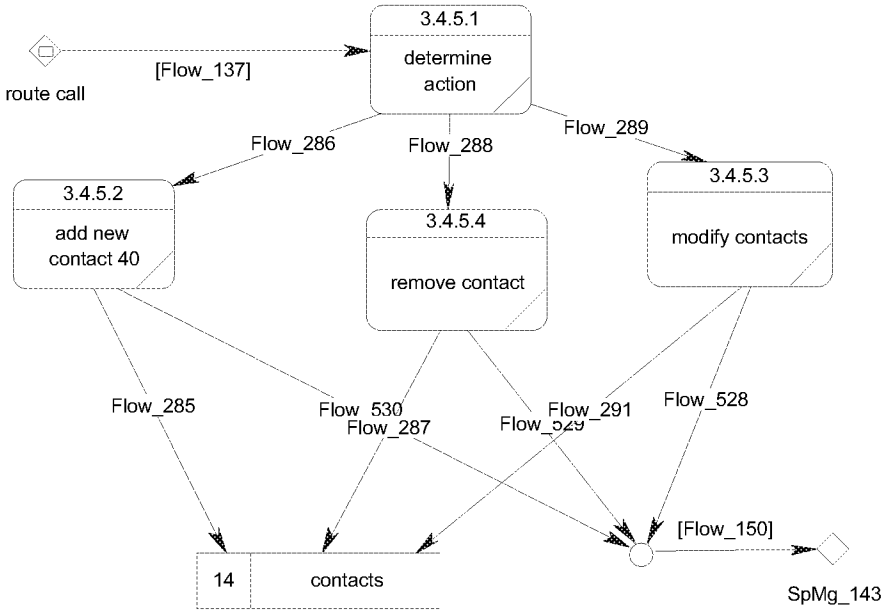


FIGURE 18. Mexico Admin Process Flow

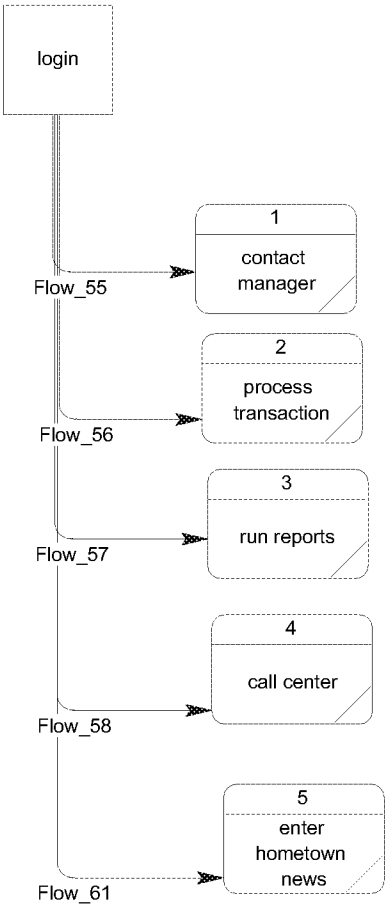


FIGURE 19. Content Management Process Flow

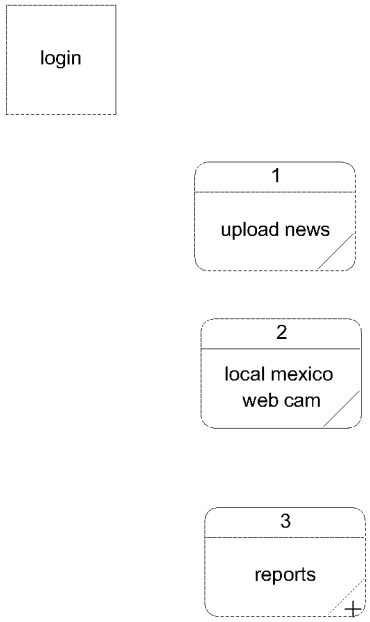


TABLE 1. Data Store List

Name	Code
call center data	STOR_270
call DB	STOR_100
cards to be mailed	STOR_89
claims	STOR_315
contacts	STOR_283
Future Locations	STOR_17
Location DB	STOR_15
lost pin data store	STOR_260
recipient info	STOR_64
referral DB	STOR_88
scripts	STOR_275
Temp IDs	STOR_35
transaction history	STOR_297
User data	STOR_102

REFERENCES

CASH MANAGEMENT

Armored Transport. Bill Brooks (302) 762 5444

Brinks. Glen Mason (972) 753 8730

Dunbar. Gary Gischel (410) 229 1926

CASH ACCEPTER HARDWARE

Mars Electronics. Michel Matoro (215) 703 0986

BIOMETRICS SOFTWARE

Visionics. Jayson (973) 953 6224

Glossary

VIDEO MESSAGING TERMINOLOGY

Microsoft Windows Media Technologies . Microsoft Corporation's media streaming services offering, which includes the Windows Media Player (for the client, or user, side), Windows Media Services (the server component), and the Windows Media Tools (for content creation and authoring).

RealNetworks RealSystem G2 . RealNetworks Inc.'s media streaming service offering, which RealNetworks formally released as a product offering in November 1998.